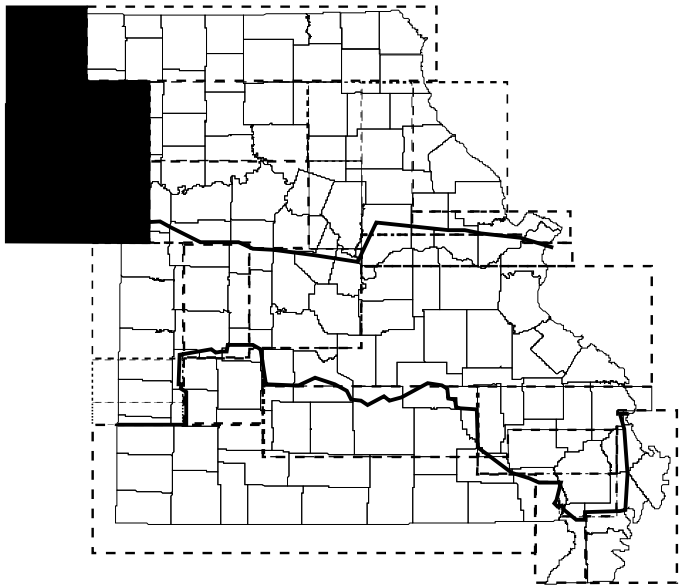
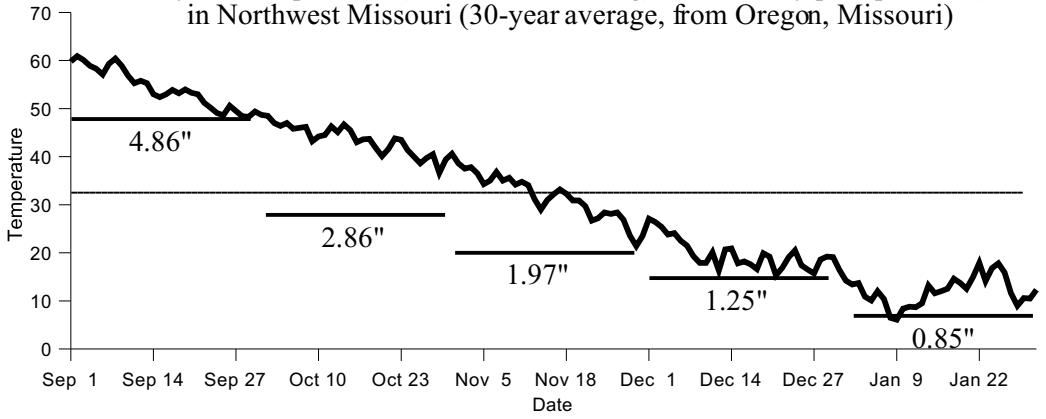
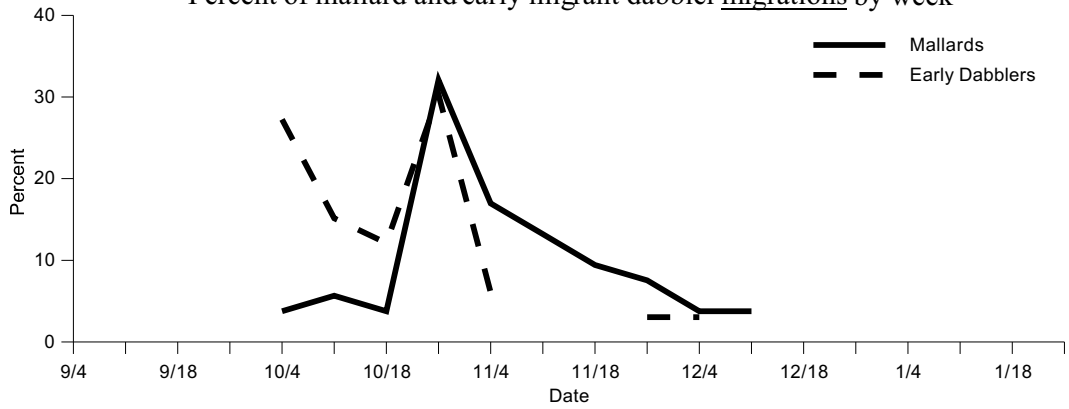
NORTHWEST: In Northwest Missouri, precipitation gradually declines from late summer through the fall. Average low temperature declines below freezing by mid-November. Migration and population data from Squaw Creek NWR, Trimble WA, and Bob Brown CA show a bimodal migration of early migrant dabbling ducks including an initial influx by early October (primarily pintails), and a secondary peak which occurs with initial mallard migrations in late October (gadwalls, green-winged teal, etc.). Virtually all mallard migrations occur prior to the end of November. Most of the early migrant dabbler use of Northwest Missouri occurs by mid-November, while mallard numbers remain high (weather depending) through early December. When shallow wetlands freeze, the Missouri River and Smithville Reservoir provide late season habitat for the mallards that remain.



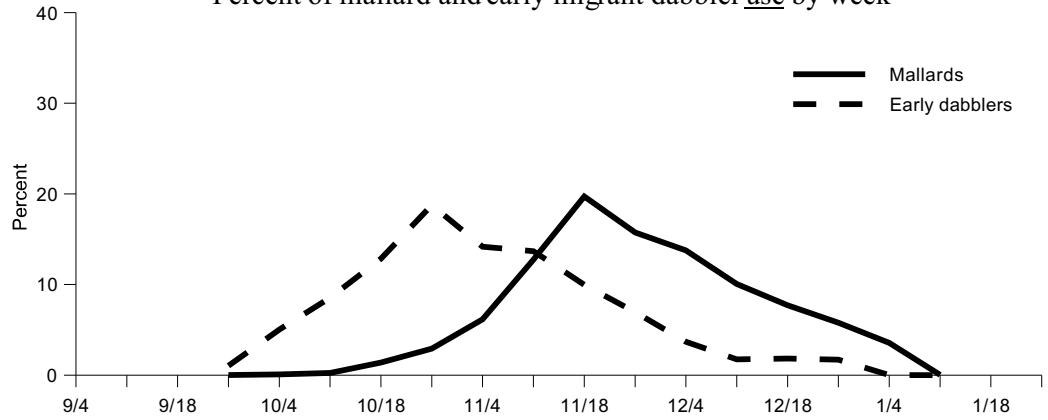
Mean daily low temperature (dotted line=freezing) and monthly precipitation (flat bar) in Northwest Missouri (30-year average, from Oregon, Missouri)



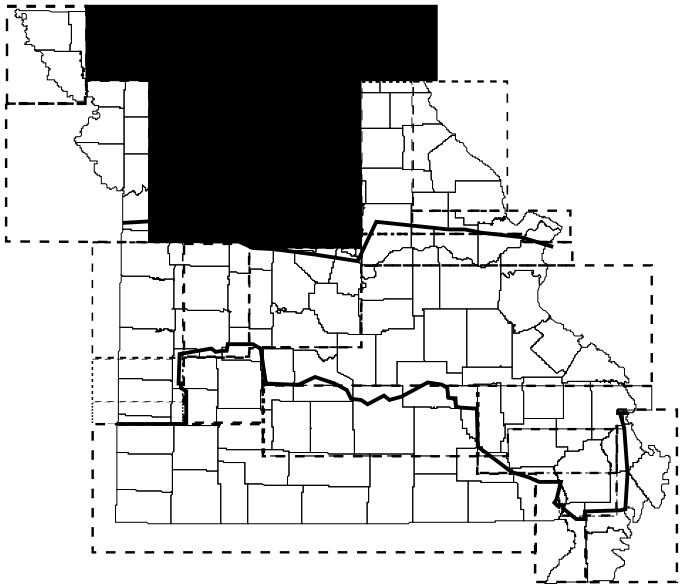
Percent of mallard and early migrant dabbler migrations by week



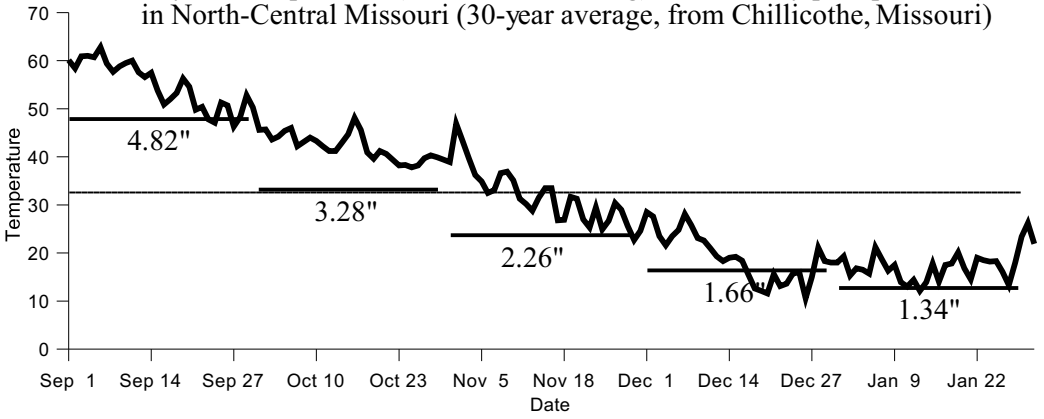
Percent of mallard and early migrant dabbler use by week



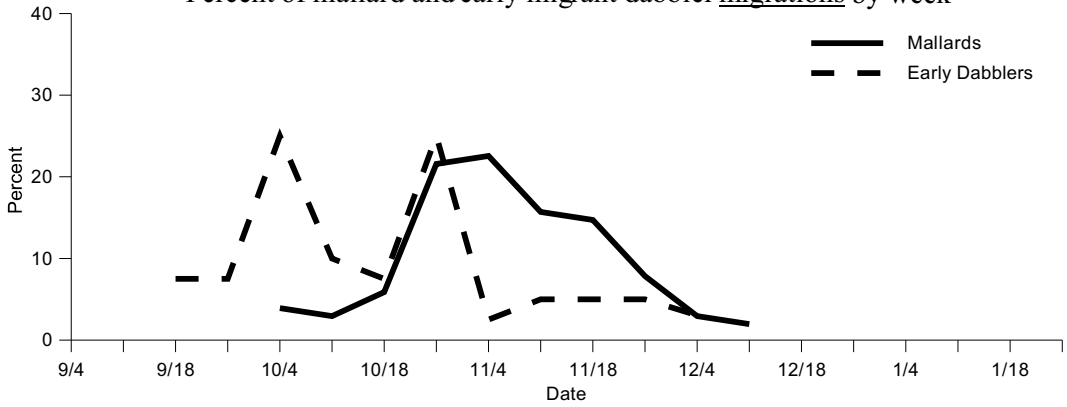
NORTH-CENTRAL: Precipitation patterns in North-Central Missouri, although greater in magnitude, are similar to Northwest Missouri with gradual declines after September. On average, freezing conditions initially occur during mid-November with freeze-up often by early December. Migration and population data are combined from Swan Lake NWR, Fountain Grove CA, Grand Pass CA, and Eagle Bluffs CA. Like Northwest Missouri, two early dabbler migrations occur, one by early October and another by the end of the month. Primary mallard migrations initially occur during the last week of October, and virtually all occur by the 1st week of December. Most of the early-migrant dabbler use occurs by November, and >90% of the mallard use occurs by the end of December. Dabbler use corresponds to migration, while mallard use is sustained after arrival. Addition of areas like Grand Pass and Eagle Bluffs near the Missouri River account for extended use in this part of Missouri.



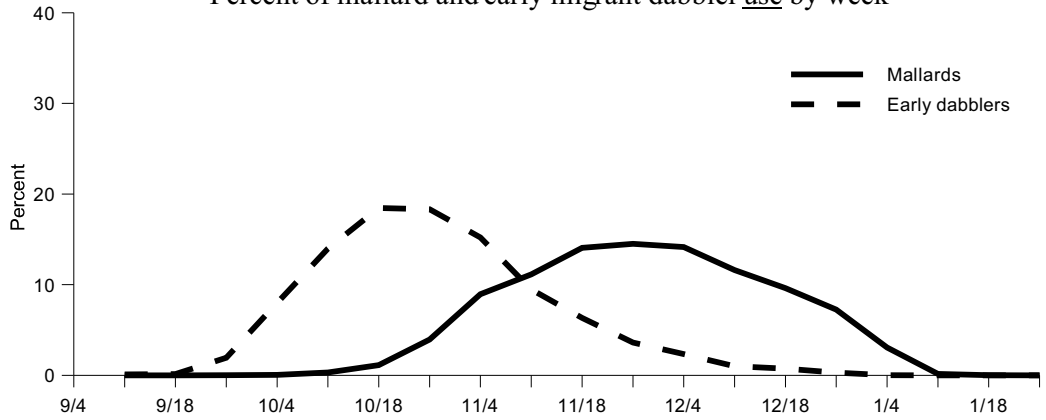
Mean daily low temperature (dotted line=freezing) and monthly precipitation (flat bar) in North-Central Missouri (30-year average, from Chillicothe, Missouri)



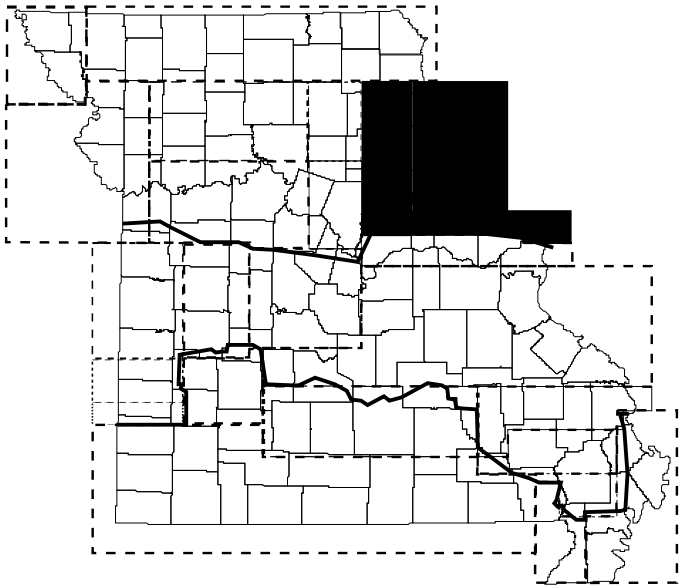
Percent of mallard and early migrant dabbler migrations by week



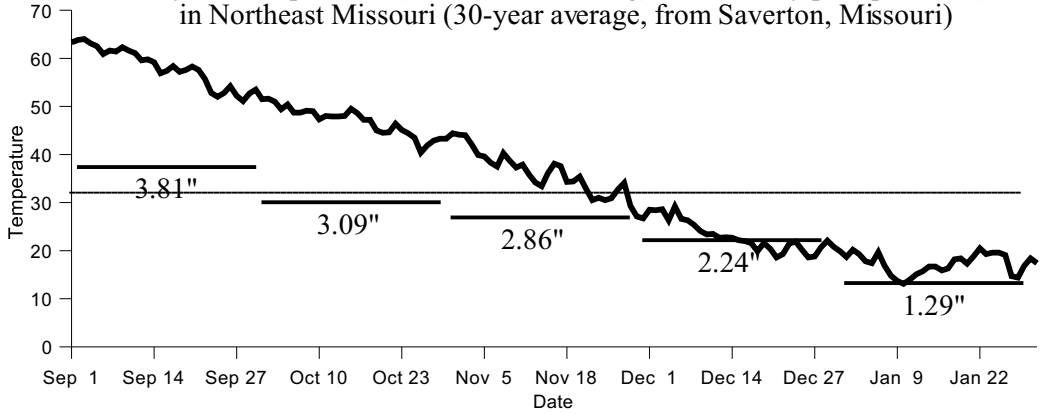
Percent of mallard and early migrant dabbler use by week



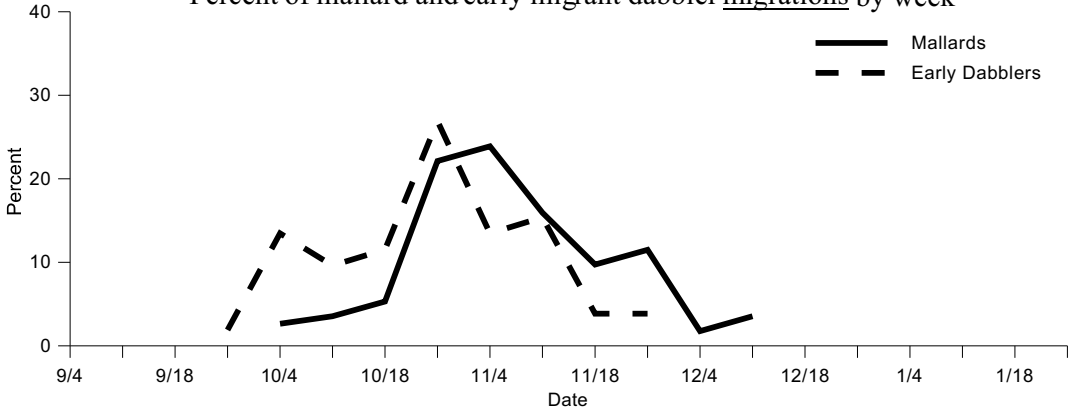
NORTHEAST: As in the rest of North Missouri, precipitation gradually declines throughout the fall and early winter, although not as dramatically as in the Northwest. On average, freezing conditions do not consistently occur until the end of November. Data reflecting duck migrations and populations are from the Upper Mississippi CA, Ted Shanks CA, B.K. Leach CA, and Marais Temps Clair CA. Early dabbler influx is not as apparent as in the western 2/3 of North Missouri; however, primary arrival in late October is similar. Mallards arrive in November and decline after early-December in most years. Deep open water in the Mississippi River provides habitat that delays departure in some years.



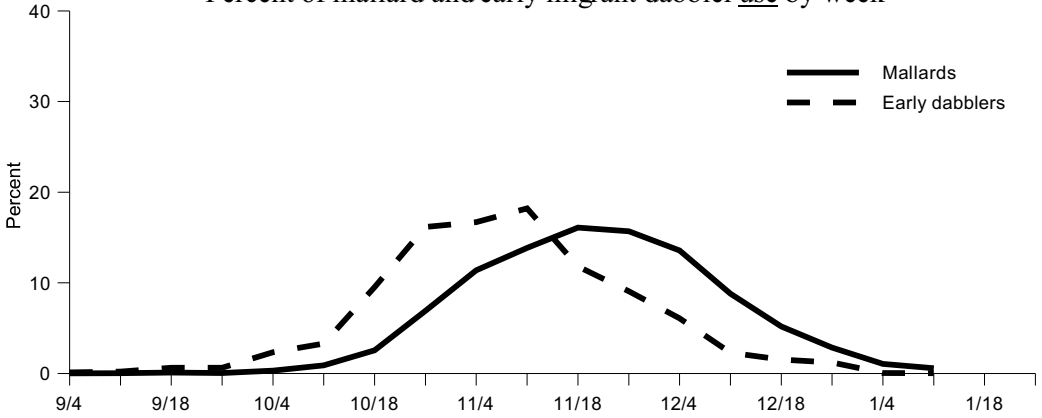
Mean daily low temperature (dotted line=freezing) and monthly precipitation (flat bar) in Northeast Missouri (30-year average, from Saverton, Missouri)



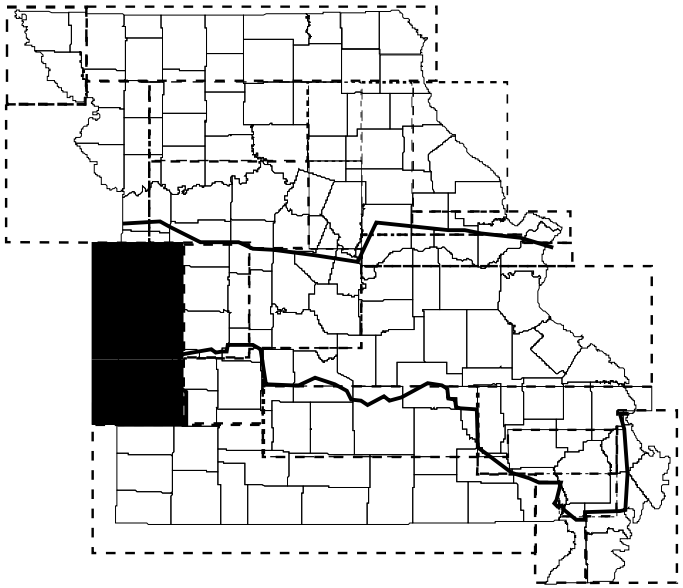
Percent of mallard and early migrant dabbler migrations by week



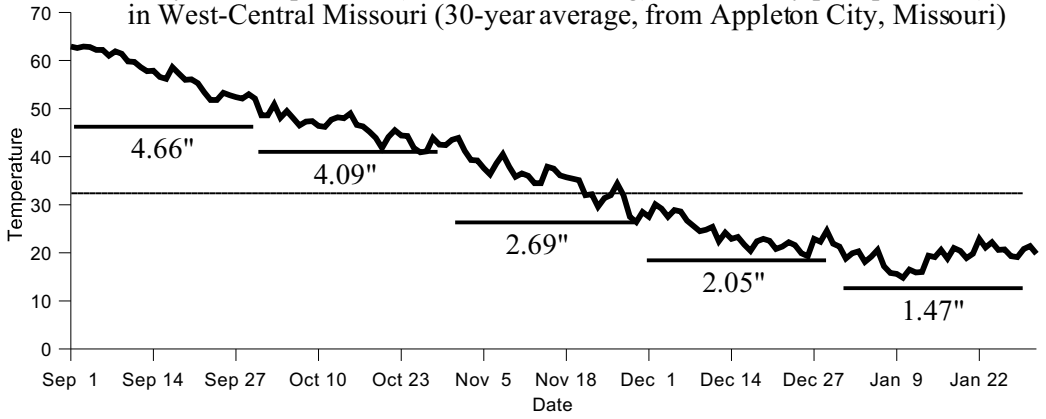
Percent of mallard and early migrant dabbler use by week



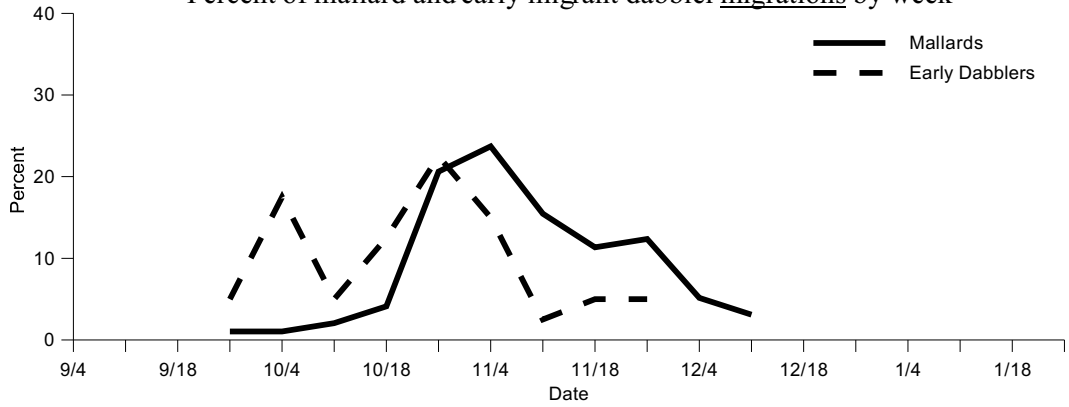
WEST-CENTRAL: Higher mean precipitation is sustained later into the fall in West-Central Missouri than in the North, and average low temperatures do not decline below freezing until late November. Even then, ice conditions do not affect hunting prospects until mid-December or later in most years. Migration and population data, combined from Schell-Osage CA and Four Rivers CA show that 90% of the early-migrant dabbling duck migrations occur by the 1st week of November. As in North Missouri, most (90%) of the mallard migrations have occurred by the last week of November. More than 90% of the early- migrant dabbler use occurs before the 3rd week of November, and 75% of the mallard use occurs by mid-December. Mallard use is less predictable in magnitude, yet still substantial into late December and early January in most years.



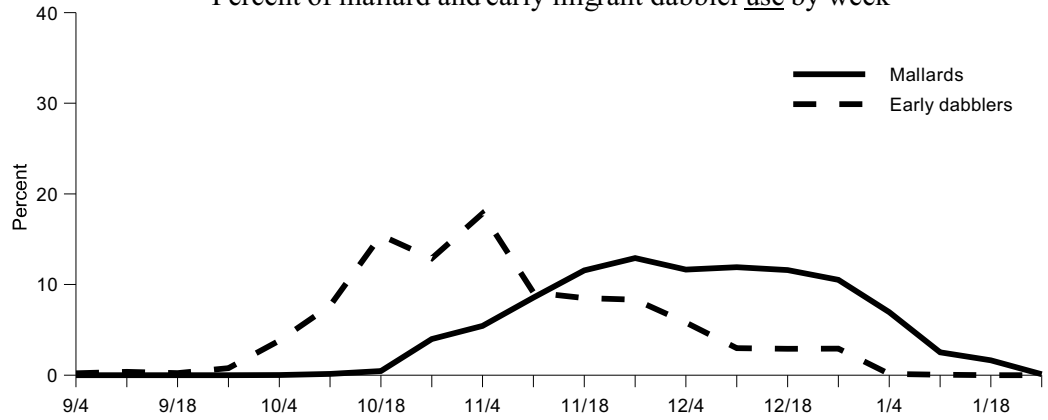
Mean daily low temperature (dotted line=freezing) and monthly precipitation (flat bar) in West-Central Missouri (30-year average, from Appleton City, Missouri)



Percent of mallard and early migrant dabbler migrations by week

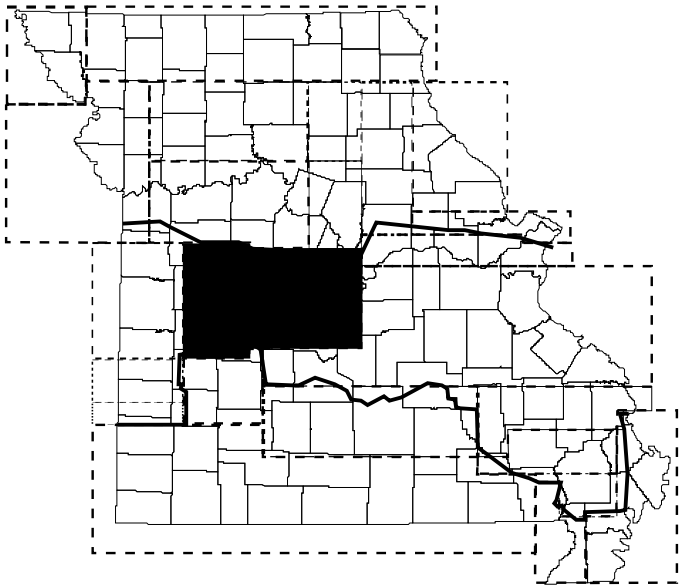


Percent of mallard and early migrant dabbler use by week

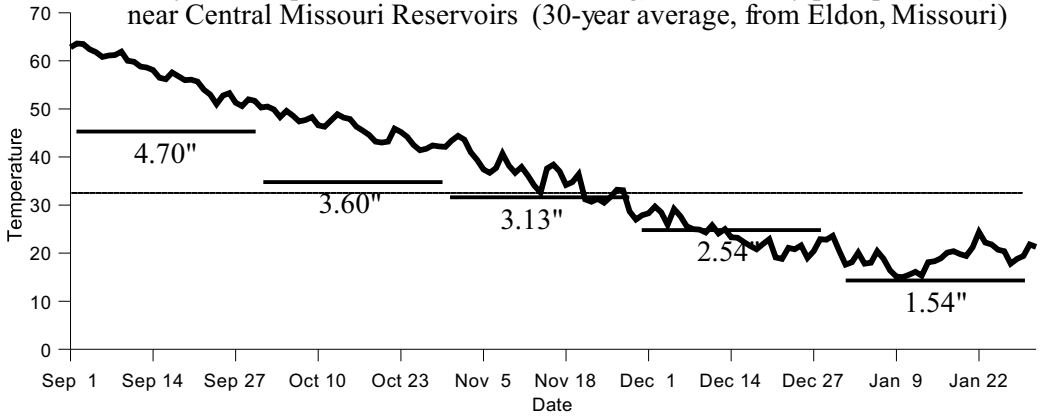


CENTRAL RESERVOIRS: Following a decline in average monthly precipitation from September, rainfall amounts are relatively consistent through November. Mean low temperatures decline below freezing by late November; however, reservoirs and the Osage River are not affected until much later (if at all).

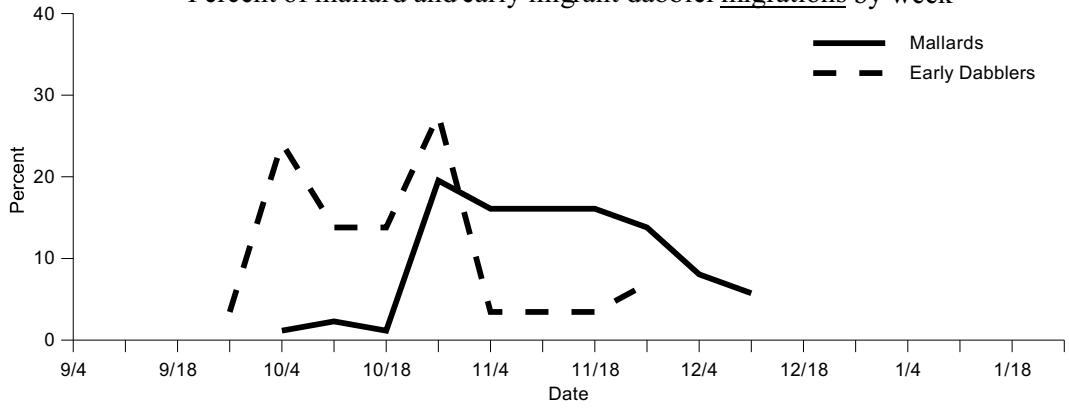
Migration and population data from Montrose CA should be comparable to the deep water habitats to the east. These data show migration phenology to be the same as North Missouri; with a bimodal peak in early dabbler movement and mallard migrations primarily during November. Although early migrant dabbler departure is similar to North Missouri, mallard use remains high through December.



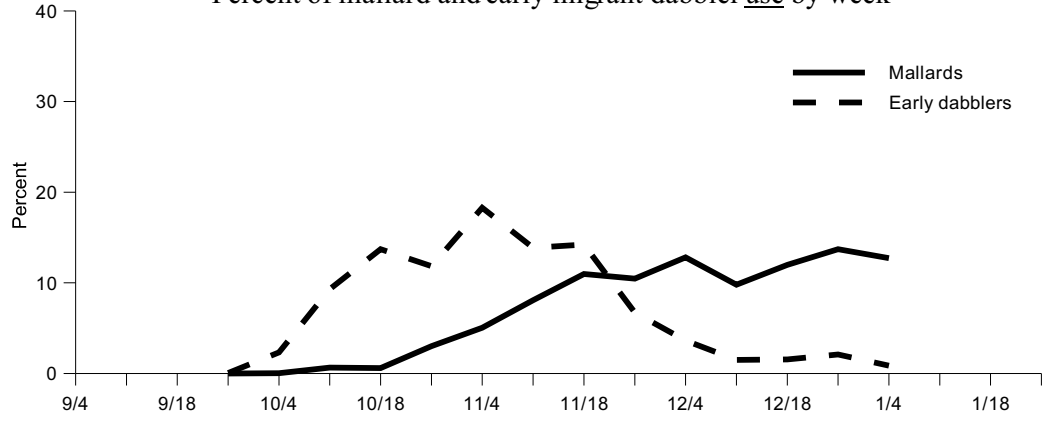
Mean daily low temperature (dotted line=freezing) and monthly precipitation (flat bar) near Central Missouri Reservoirs (30-year average, from Eldon, Missouri)



Percent of mallard and early migrant dabbler migrations by week

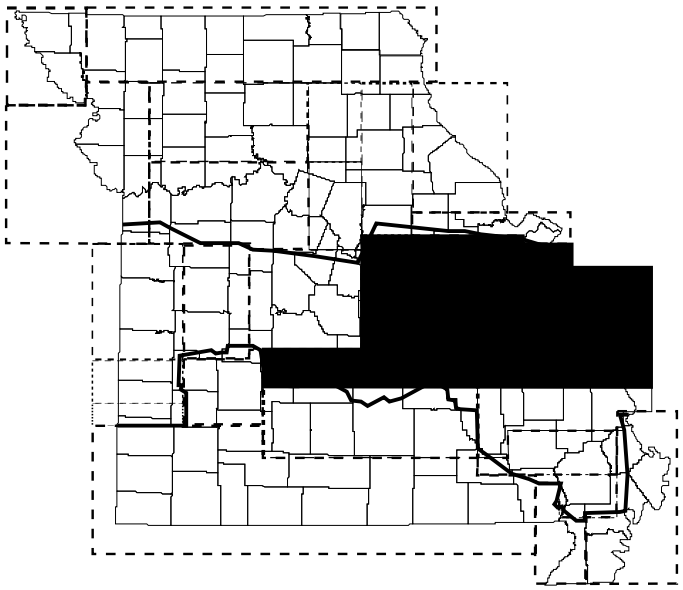


Percent of mallard and early migrant dabbler use by week

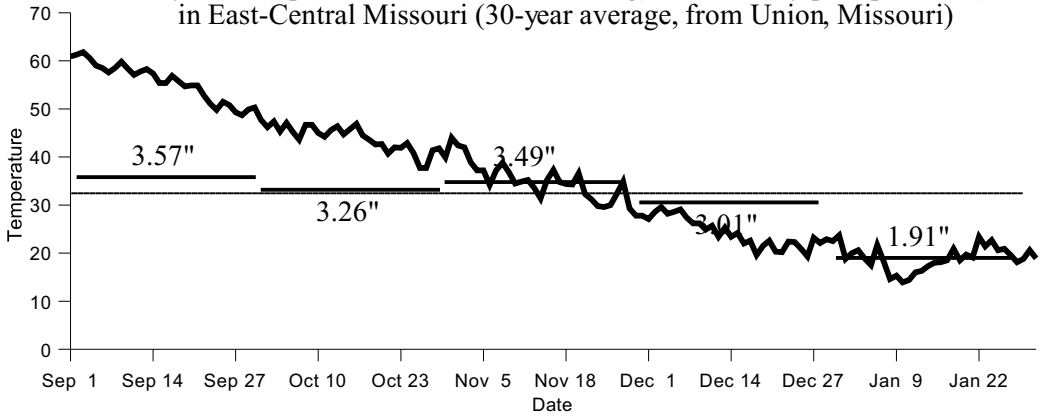


EAST-CENTRAL: The trend of sustained precipitation into the fall is apparent in East-Central Missouri. On average, there is little change from early fall through early winter. Mean low temperatures decline to below freezing by early December. Lower temperatures, however, do not affect much of the wetland habitat associated with the lower Missouri and mid-Mississippi rivers. Although backwaters and floodplain depressions freeze by mid-December, rivers remain open through December in most years.

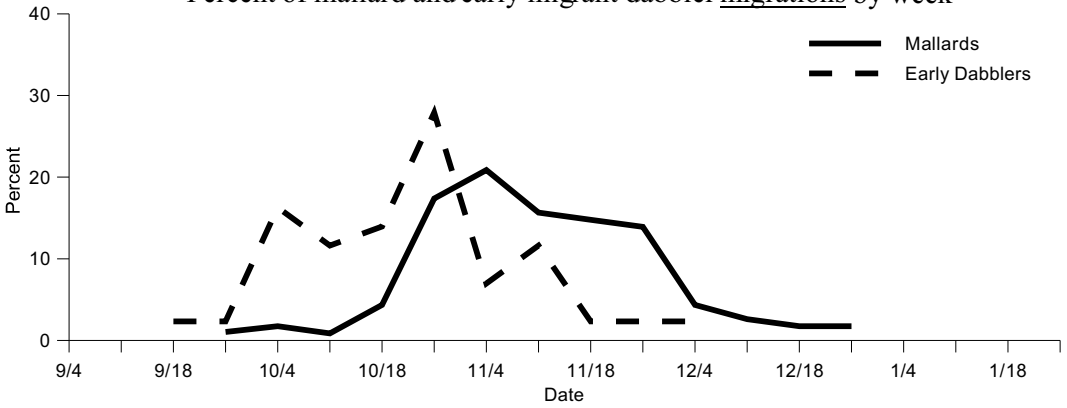
Migration and population data are not specific to this part of Missouri because no managed areas are located here. Thus, information from the Southeast is used to reflect the phenology of movement and use. Migrations primarily occur before December; this is consistent statewide. The pattern of duck use likely is intermediate between that represented by survey information from the Northeast and that from Southeast Missouri. Because of the lack of managed flooding and food, duck numbers are not predictable throughout the fall and winter in East-Central Missouri.



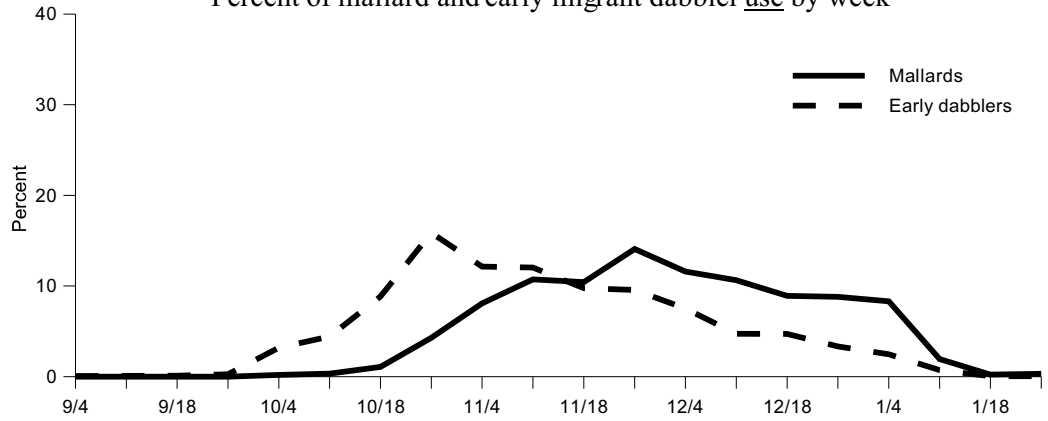
Mean daily low temperature (dotted line=freezing) and monthly precipitation (flat bar) in East-Central Missouri (30-year average, from Union, Missouri)



Percent of mallard and early migrant dabbler migrations by week

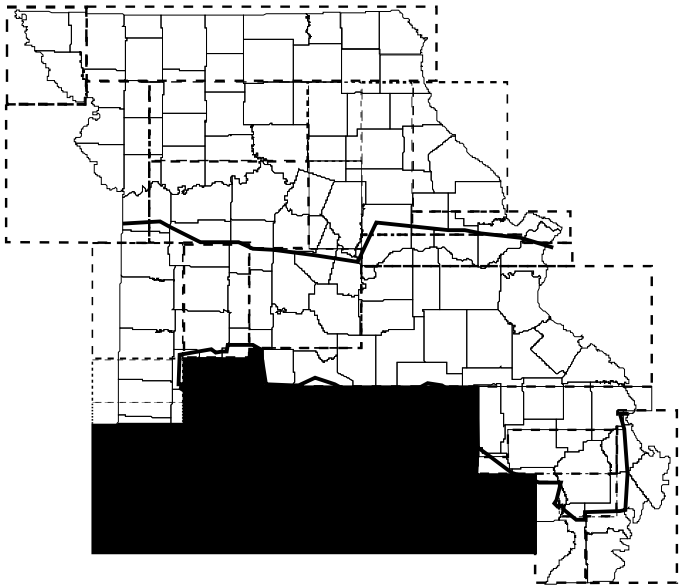


Percent of mallard and early migrant dabbler use by week

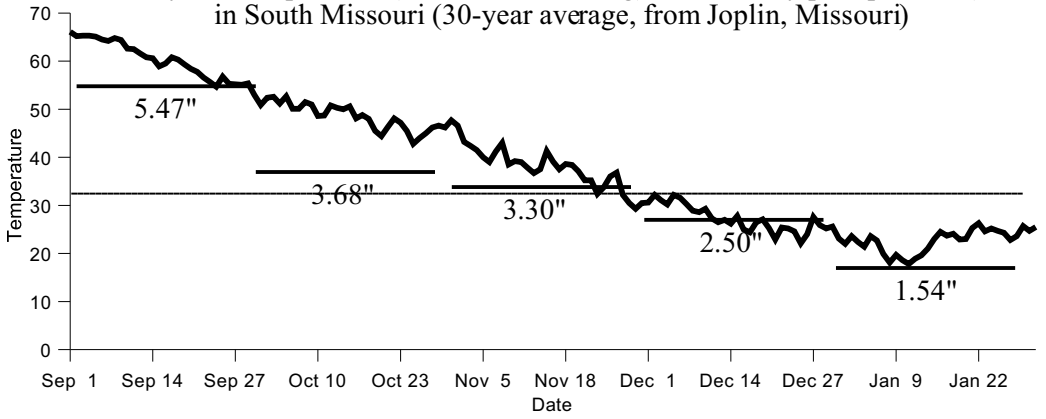


SOUTH: Average precipitation also declines in South Missouri from early fall through winter, although September rainfall generally is greater than North Missouri. Mean low temperatures above freezing occur through November and are only slightly below freezing through much of December. Despite colder temperatures, however, deep reservoirs and streams freeze much later than in North Missouri (if at all), and open water for ducks and duck hunters remains.

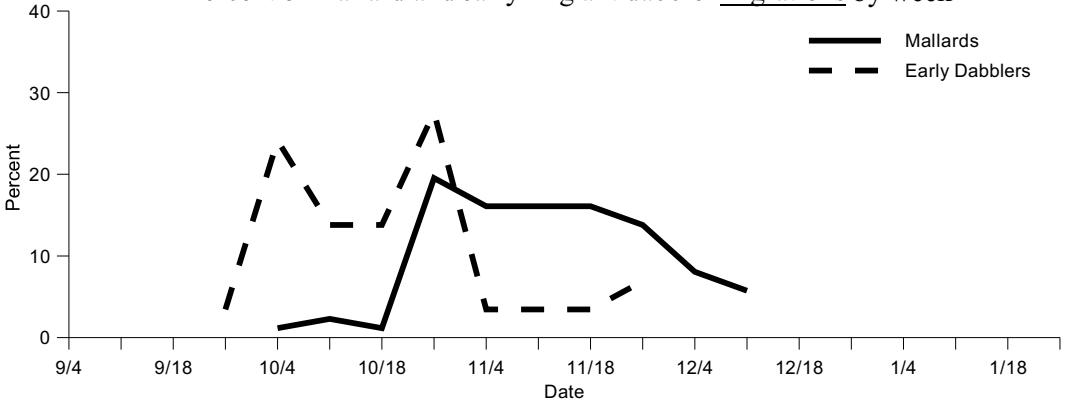
No long-term migration or population data are available for this portion of Missouri. Thus, information from Montrose CA, a deep water reservoir to the north is used to reflect expectations for duck movement. As in other portions of the state, migrations of both mallards and other dabblers predominantly occur before December. Populations of ducks, mallards in particular, remain well into the winter as long as open water and food conditions are suitable.



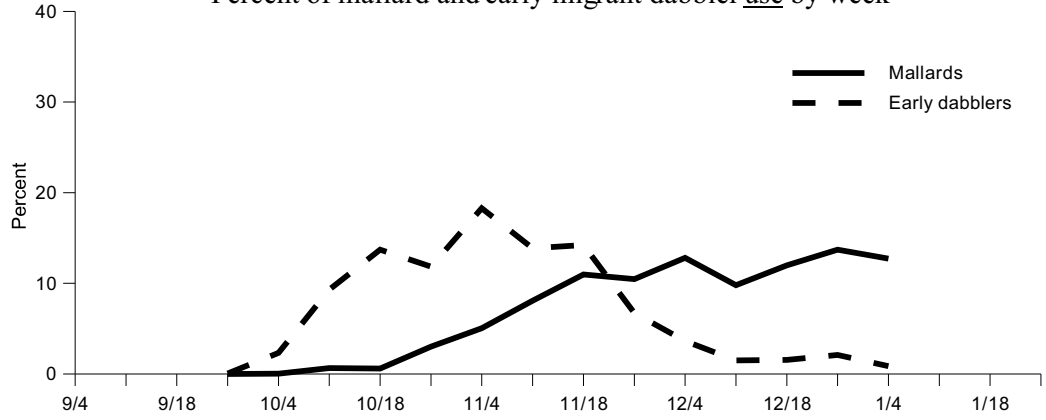
Mean daily low temperature (dotted line=freezing) and monthly precipitation (flat bar) in South Missouri (30-year average, from Joplin, Missouri)



Percent of mallard and early migrant dabbler migrations by week

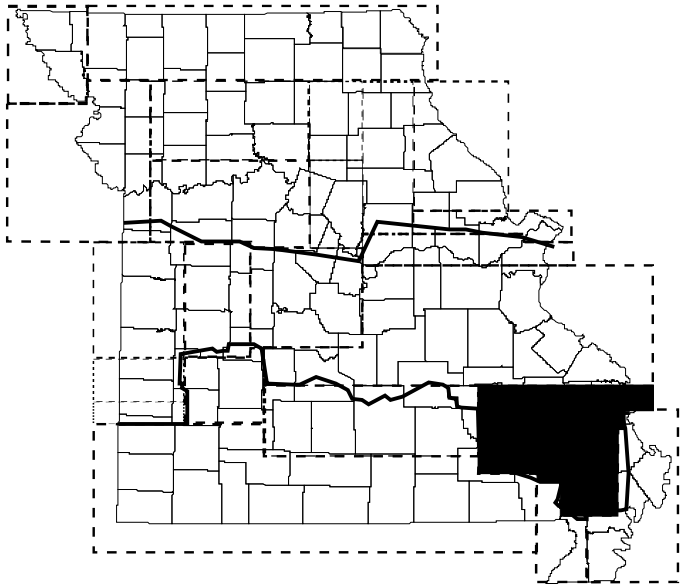


Percent of mallard and early migrant dabbler use by week

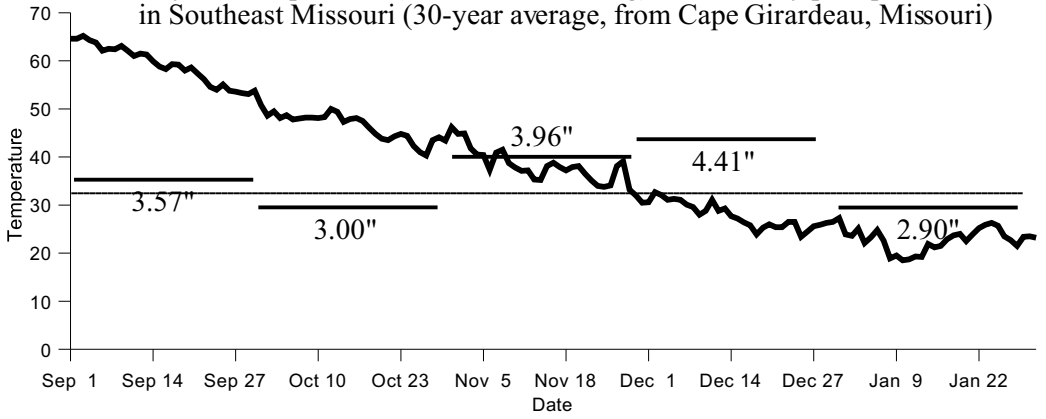


SOUTHEAST: Early fall in Southeast Missouri is relatively dry compared to North Missouri. The primary contrast occurs in November and December as mean precipitation increases rather than declines as in the North. With increased rainfall and temperatures that do not drop below freezing until early December, ice conditions normally do not affect hunting prospects until after mid-December.

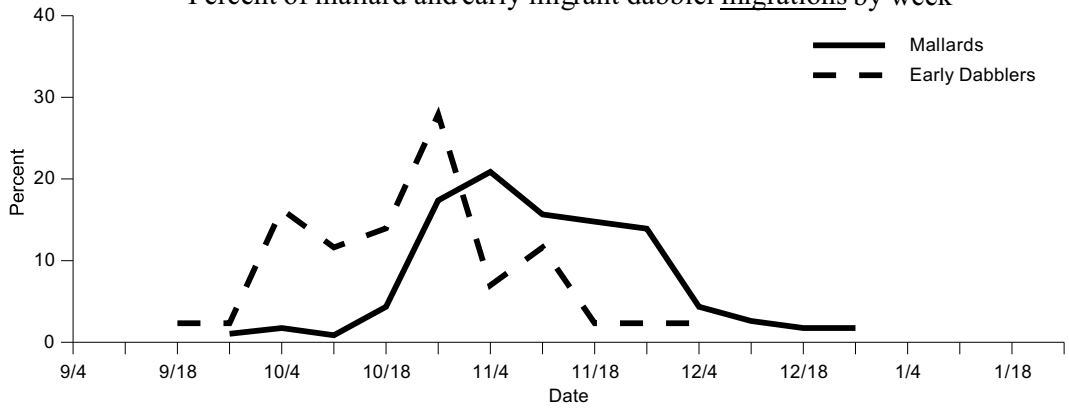
Population and migration data from Duck Creek CA, Mingo NWR, and Otter Slough CA show initial migrations on the same schedule as in North Missouri. A secondary period of duck influx occurs in mid to late November as northern wetlands freeze and ducks are forced south. Regardless, mallard and other dabbler migrations essentially are complete before mid-December. In contrast, use of Southeast Missouri wetlands are sustained much longer into the fall and winter than in most of North Missouri. Populations of early- migrant dabblers and mallards remain in Southeast Missouri well after migration events occur. The duration of use is a function of weather and habitat conditions.



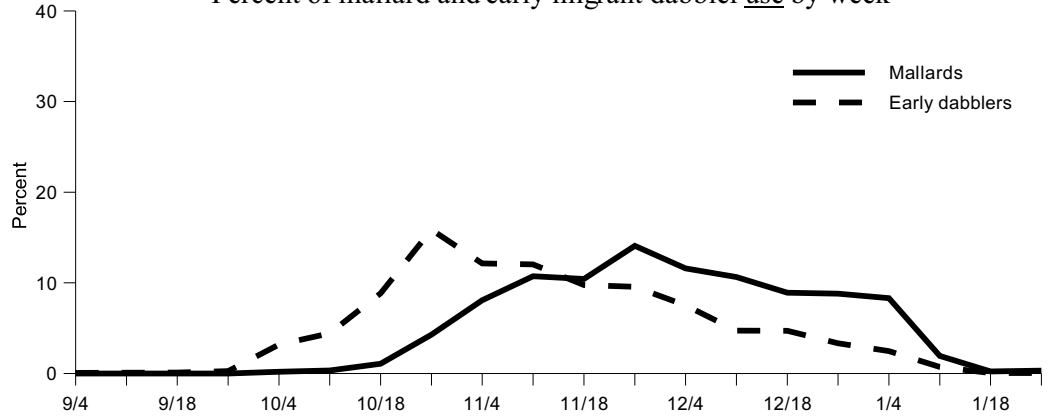
Mean daily low temperature (dotted line=freezing) and monthly precipitation (flat bar) in Southeast Missouri (30-year average, from Cape Girardeau, Missouri)



Percent of mallard and early migrant dabbler migrations by week

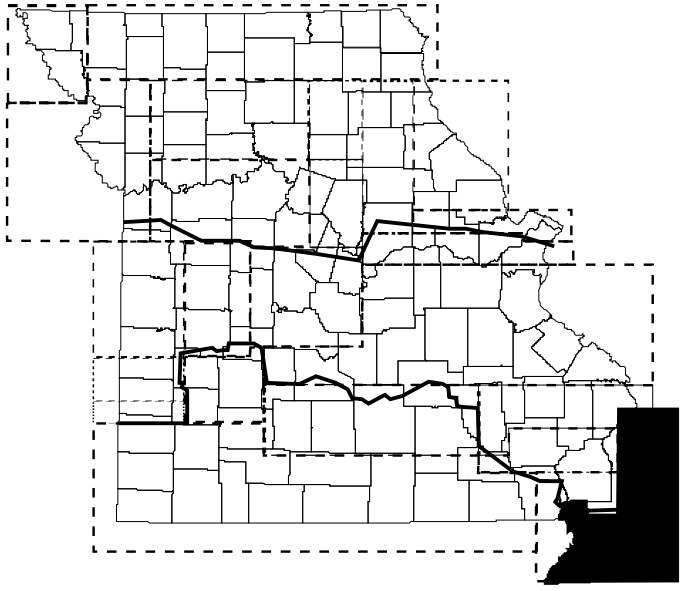


Percent of mallard and early migrant dabbler use by week

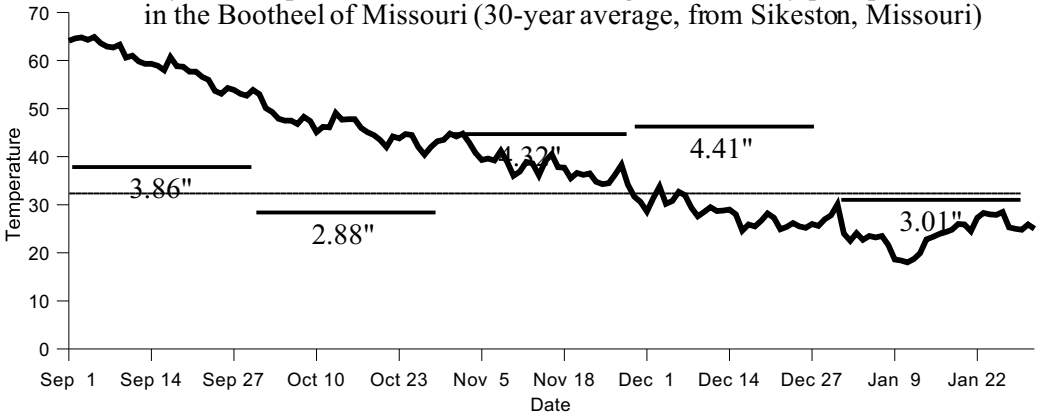


BOOTHEEL: Precipitation patterns reflect the late fall and early winter flooding potential in the Missouri Bootheel. After dry conditions in early fall, mean precipitation increases dramatically in November and December. Although average low temperatures decline below freezing by early December, substantially lower temperatures do not occur on average before January.

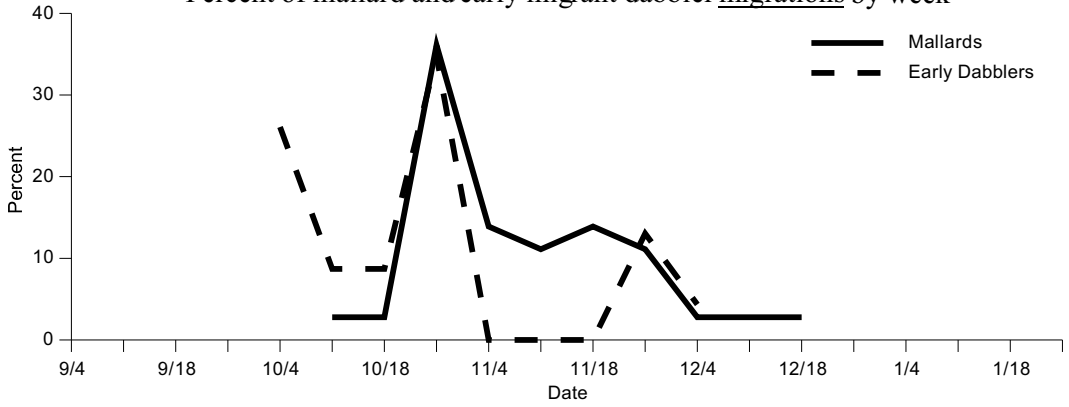
Unlike much of Missouri, the Bootheel is affected less by duck migration timing than by freeze-up in other portions of the state, which results in birds immigrating into remaining open water. Population and migration data from Ten Mile Pond CA, although only available for the last decade, reflect migrations similar to the rest of Missouri but much different patterns of duck use. Initial arrivals of early migrant dabblers by early October are followed by a more pronounced peak that corresponds to the primary mallard migrations in late October and early November. Despite relatively early arrival of mallards and other dabblers, the sustained use through December reflects habitat and weather characteristics in the Bootheel that are quite different from the remainder of Missouri. Although Ten Mile Pond data indicate a decline in bird use by early January, ducks often remain on the Lower Mississippi and St. Francis rivers later into the winter.



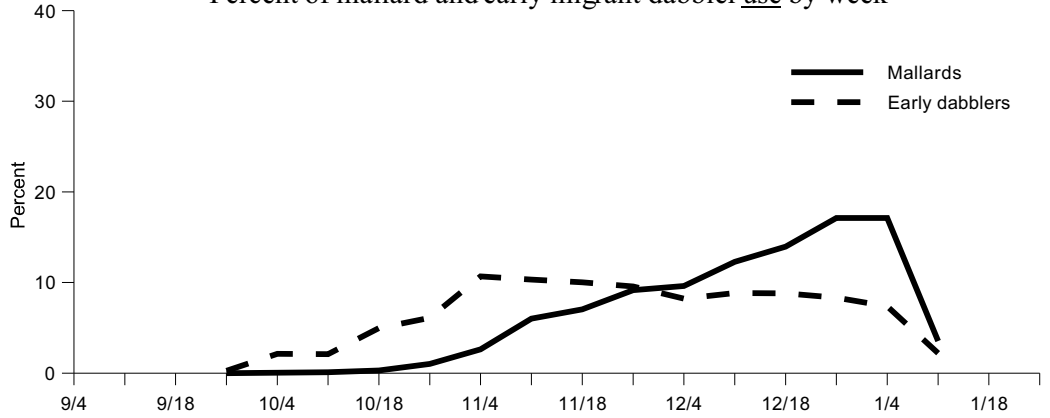
Mean daily low temperature (dotted line=freezing) and monthly precipitation (flat bar) in the Bootheel of Missouri (30-year average, from Sikeston, Missouri)



Percent of mallard and early migrant dabbler migrations by week

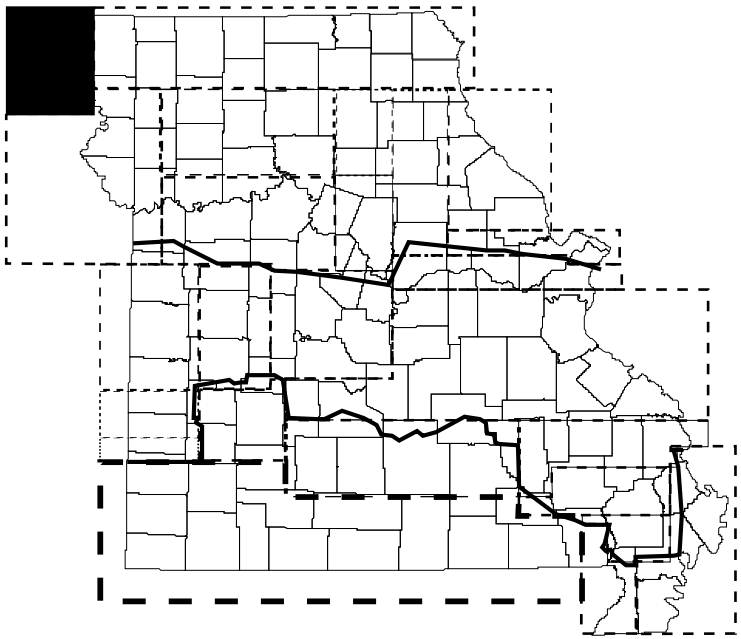


Percent of mallard and early migrant dabbler use by week

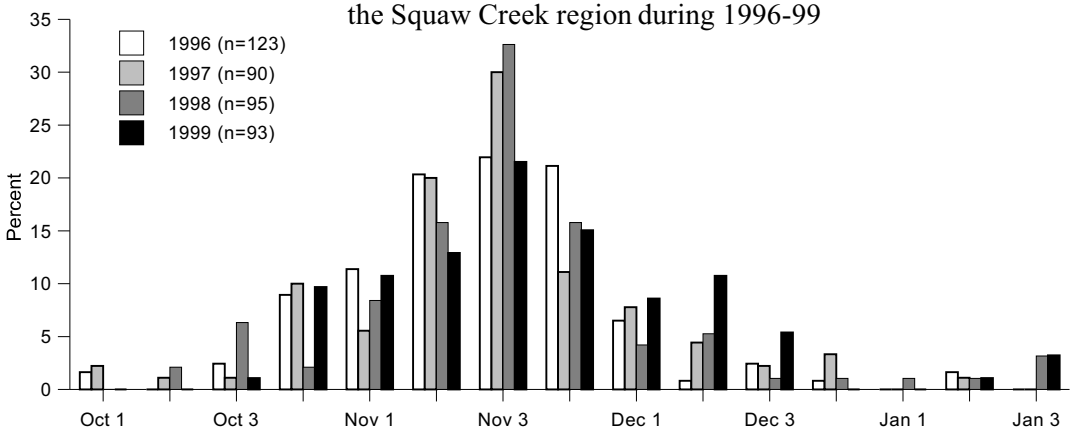


SQUAW CREEK: Until development of Bob Brown CA in 1992 and acquisition of Nodaway Valley CA during 1991-94 (restoration to be completed in 2001), primary hunting sites were on private wetlands associated with Squaw Creek NWR and to a degree, the Missouri River. Although this is a small region, the annual proportion of the statewide harvest has been 3-7%(40-60% mallards). As in most other regions of Missouri, harvest during the late 1980s and early 1990s was affected by low fall flights and restricted hunting seasons (30-40 days).

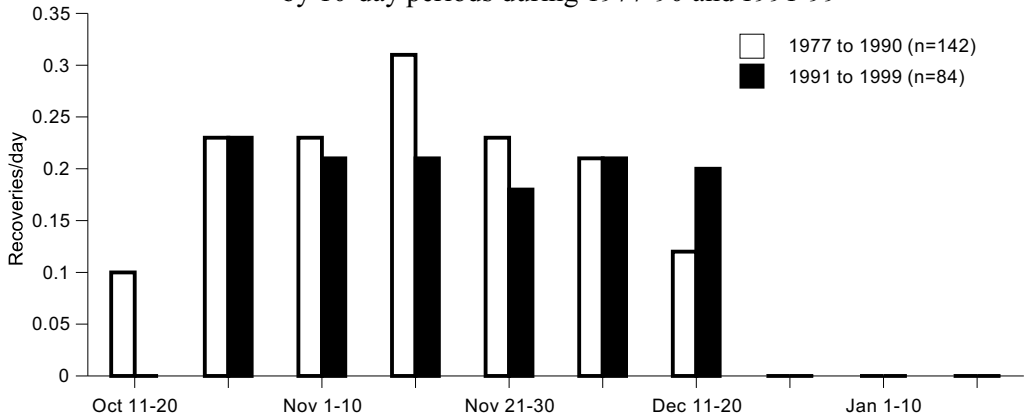
More than 90% of the weeks most preferred to hunt ducks occur between the 4th week of October and the 2nd week of December, with a peak preference around Thanksgiving. Mallard harvest (reflected by band recoveries) has been very consistent throughout the fall.



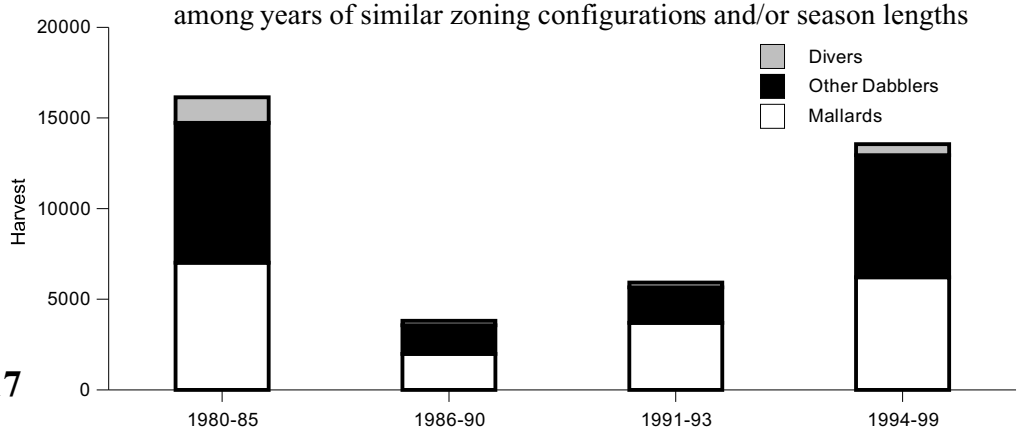
Week most preferred to hunt ducks for hunters who primarily hunted the Squaw Creek region during 1996-99



Numbers of mallard band recoveries per day of open season by 10-day periods during 1977-90 and 1991-99

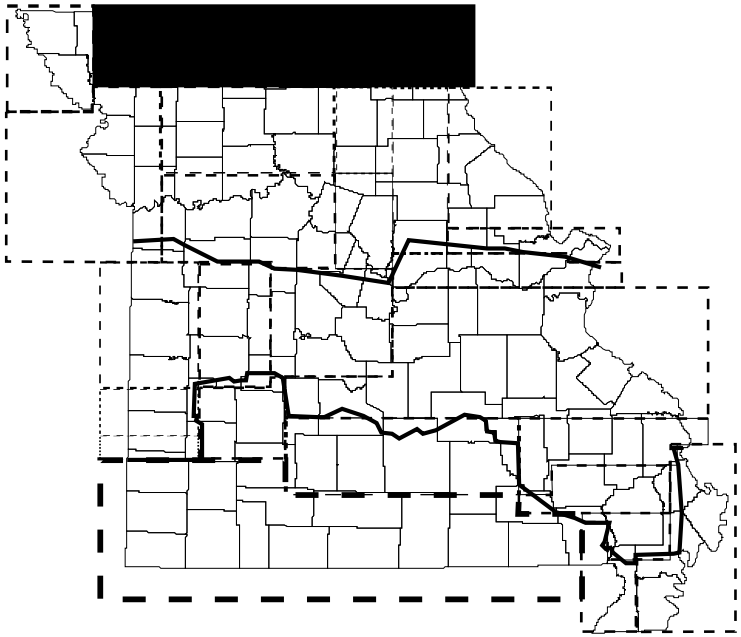


Numbers of mallards, other dabbling ducks, and diving ducks harvested among years of similar zoning configurations and/or season lengths

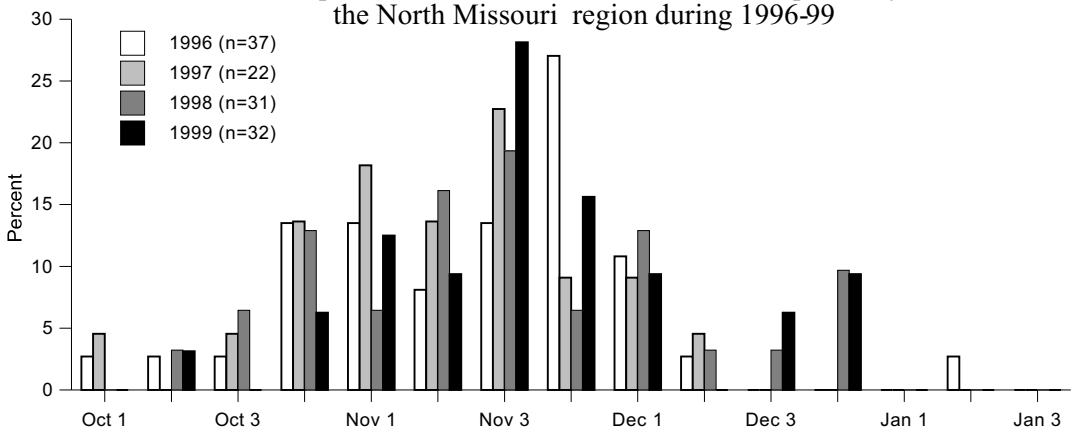


NORTH MISSOURI: Small streams and rivers, associated floodplain wetlands (oxbow depressions), and farm ponds account for much of the North Missouri wetland habitat. The region accounts for 2-4% (35-60% mallards) of the primary hunting and duck harvest for Missouri waterfowlers. Much of the duck harvest corresponds to migration events prior to mid-November.

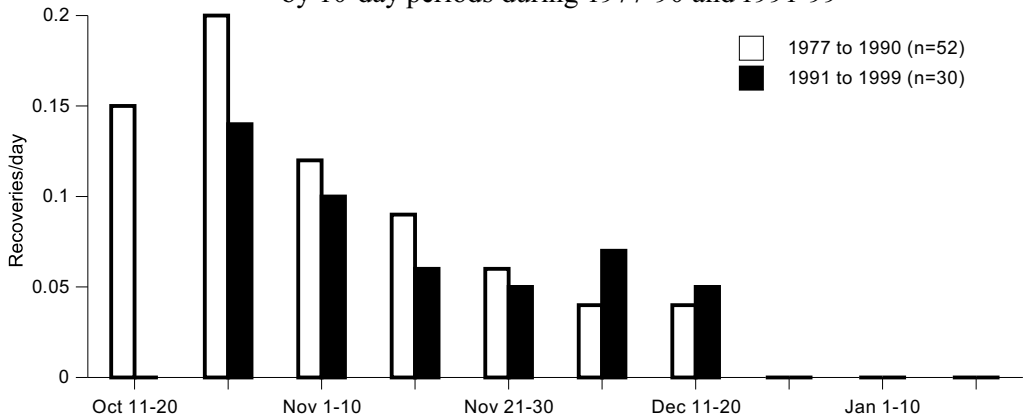
Peak mallard harvest during the last 2 decades has been in the last 10 days of October. Fairly high mallard harvest also occurred during early 5-day, season segments of the 1980s despite mid-October timing. Recently, there has been no consistent trend in hunting season preferences, although peaks during late November correspond to the Thanksgiving weekend and post deer season period. Greatest preference for weeks to hunt occur after the primary period of mallard harvest; however, 5-10% of the hunters preferred hunting weeks prior to mid-October.



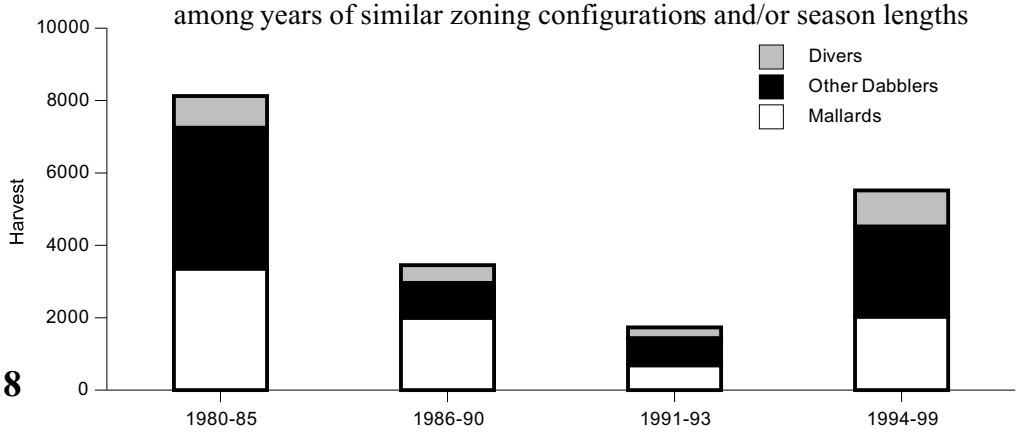
Week most preferred to hunt ducks for hunters who primarily hunted the North Missouri region during 1996-99



Numbers of mallard band recoveries per day of open season by 10-day periods during 1977-90 and 1991-99

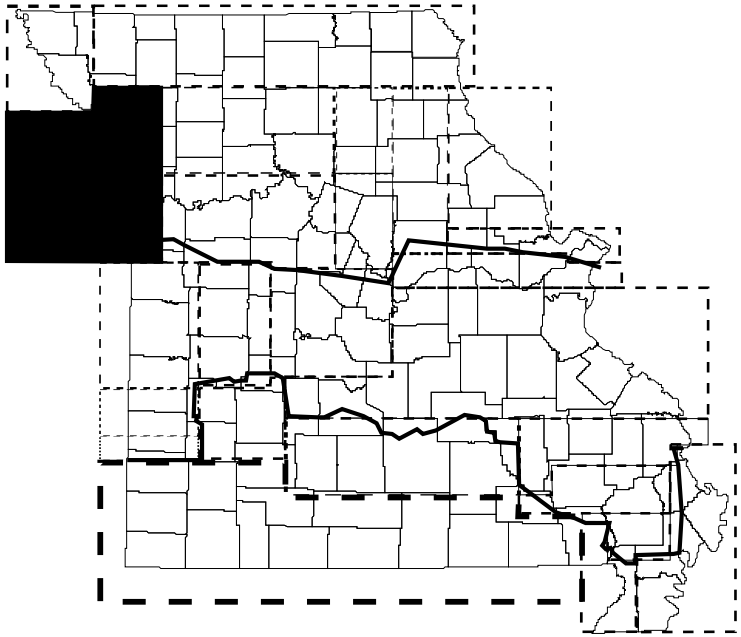


Numbers of mallards, other dabbling ducks, and diving ducks harvested among years of similar zoning configurations and/or season lengths

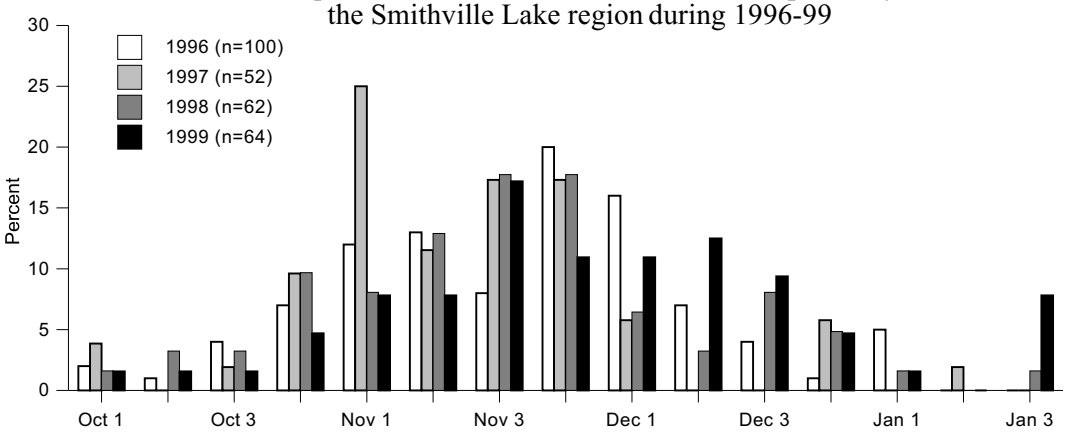


SMITHVILLE LAKE: Prior to the early 1980s, the primary wetland area in this part of the state was the Trimble Wildlife Area and floodplain habitats associated with the Missouri and other rivers in western Missouri. Although inundation of Smithville resulted in the elimination of Trimble, the substantial increase in water area (although aquatic rather than managed wetland habitat) offered an increased attraction for ducks and duck hunters. A consistent 5-6% of the statewide duck harvest has occurred in the Smithville region since 1980 (30-60% mallards). The overall magnitude of harvest increased since 1993 as seasons increased in length.

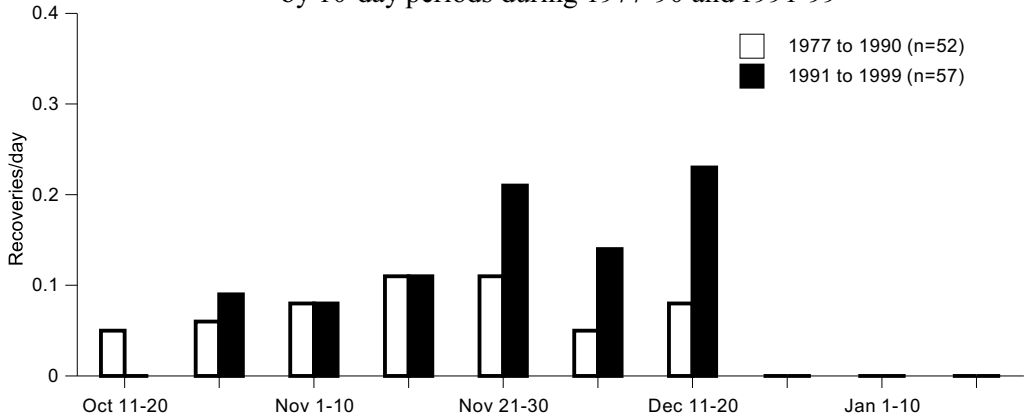
Preferred weeks to hunt primarily favor mid- to late November. As in other regions, hunters' views about their preferred week shifted later after recent mild years. Primary mallard harvest occurred during late November or later (2 band recoveries during 1 season day after 20 December 1991-99 are not included due to small sample sizes); however, the high proportion of ducks other than mallards that are harvested (up to 70%) seems to explain preferences for earlier dates.



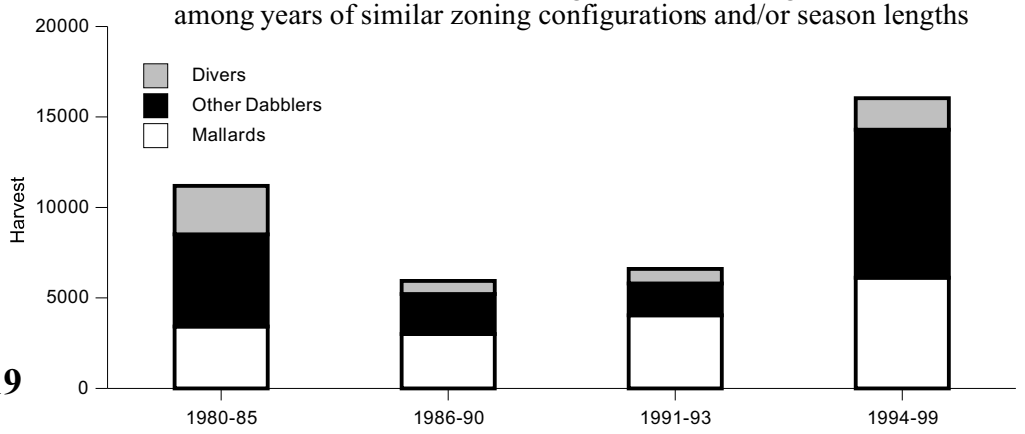
Week most preferred to hunt ducks for hunters who primarily hunted the Smithville Lake region during 1996-99



Numbers of mallard band recoveries per day of open season by 10-day periods during 1977-90 and 1991-99

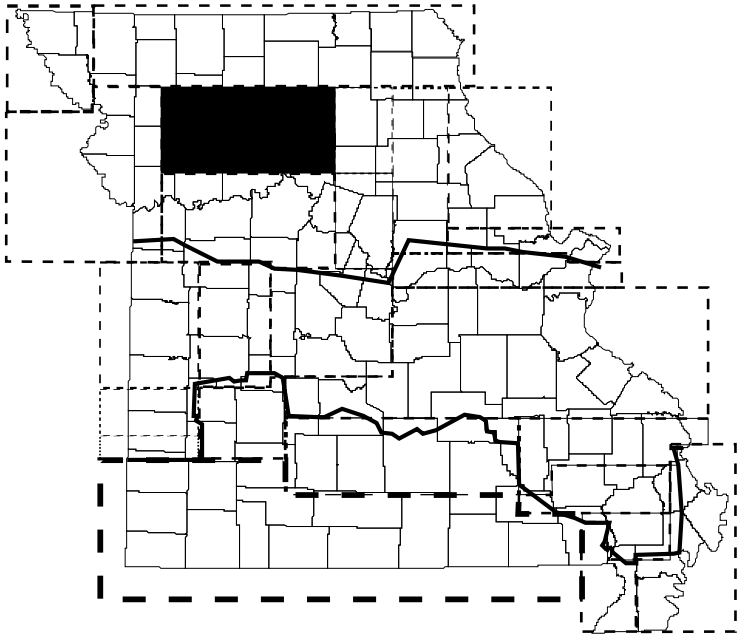


Numbers of mallards, other dabbling ducks, and diving ducks harvested among years of similar zoning configurations and/or season lengths

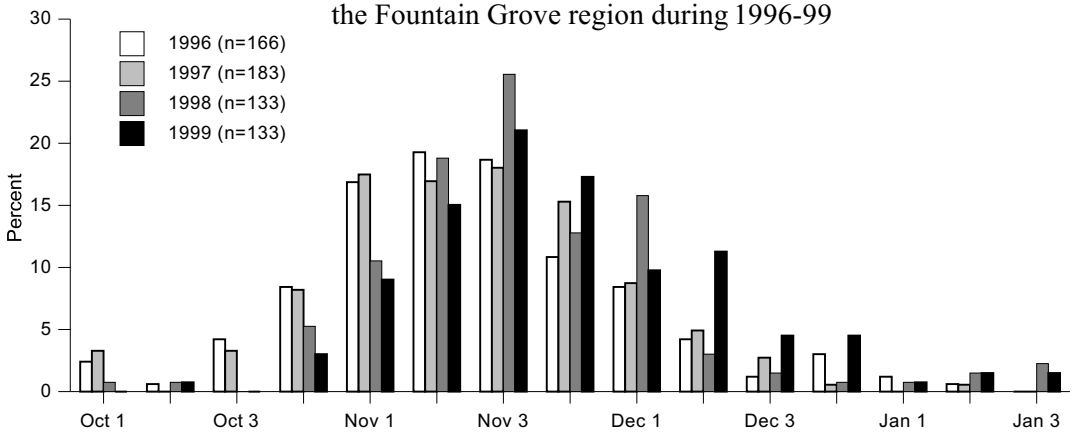


FOUNTAIN GROVE: The Grand River and associated public and private wetlands provide the primary habitat for waterfowl and waterfowl hunters. The region historically featured Canada geese; however, duck use always has been substantial. Shallow, managed wetlands predominate; thus, early season habitat prevails. Hunting season timing has favored late October and the month of November. The region has accounted for 7-14% of the statewide harvest since 1980 (40-60% mallards).

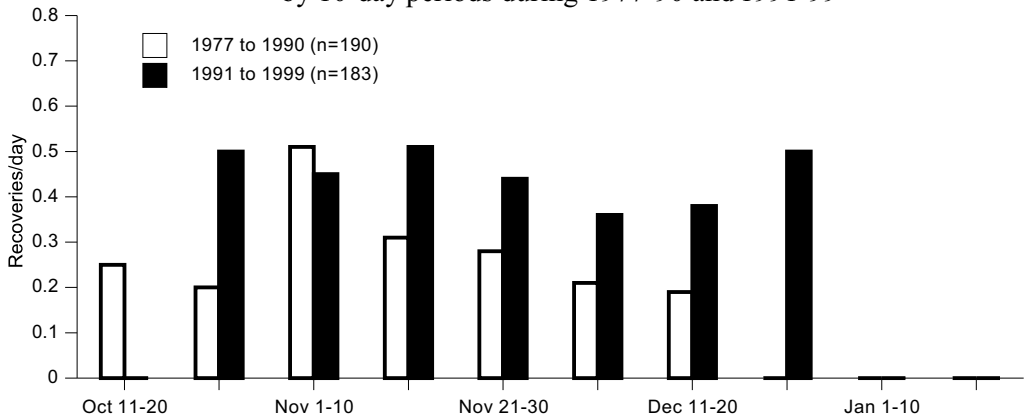
Hunting preferences range from late October through mid-December, with 95% of the hunters preferring weeks before mid-December. As in most other regions, later season preferences developed after the mild winters of 1998 and 1999. Mallard band recoveries reflected more consistent harvest throughout the season during the last decade when compared to 1977-90.



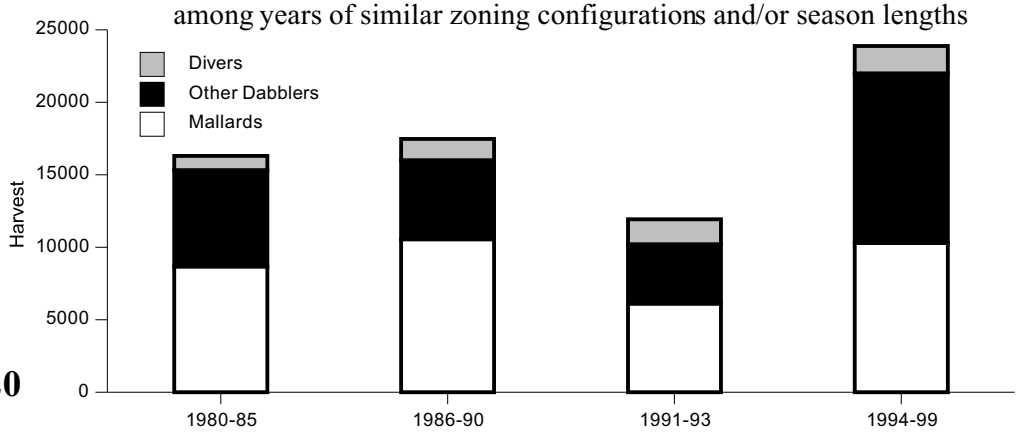
Week most preferred to hunt ducks for hunters who primarily hunted the Fountain Grove region during 1996-99



Numbers of mallard band recoveries per day of open season by 10-day periods during 1977-90 and 1991-99

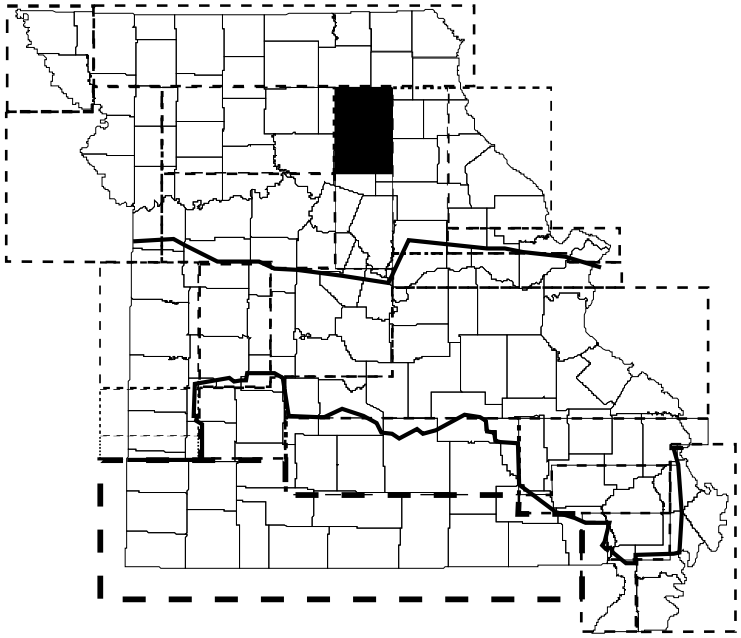


Numbers of mallards, other dabbling ducks, and diving ducks harvested among years of similar zoning configurations and/or season lengths

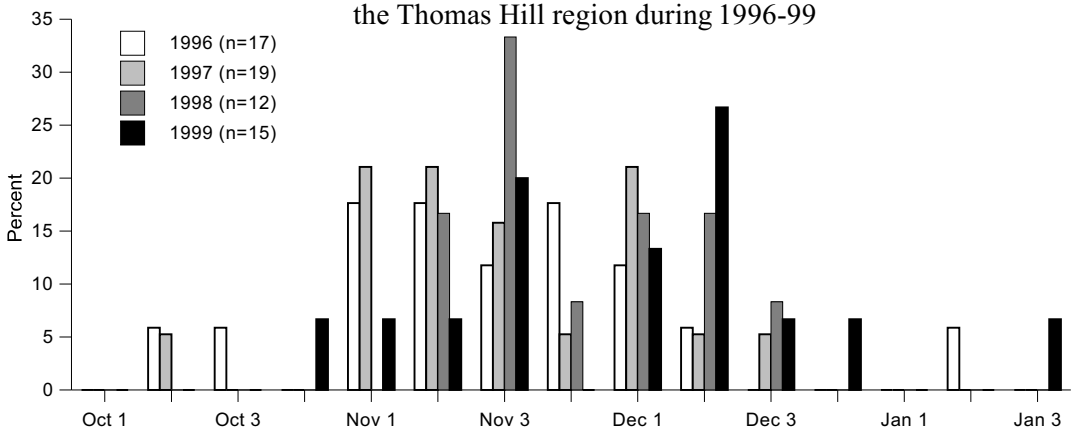


THOMAS HILL: Reservoirs and the Chariton River provide the primary wetland habitats in this region. The varied habitats, ranging from shallow remnant depressions in the Chariton River floodplain to deep, open water associated with warm-water discharge from power generation on Thomas Hill, account for diverse views about hunting seasons and varied trends in waterfowl harvest. The region accounts for 1-2% of the areas hunted most for ducks by Missouri waterfowl hunters and as a result, about 1-2% of the statewide duck harvest (40-80% mallards). A similar proportion of early-migrant dabbling ducks and diving ducks have comprised duck harvest from the region.

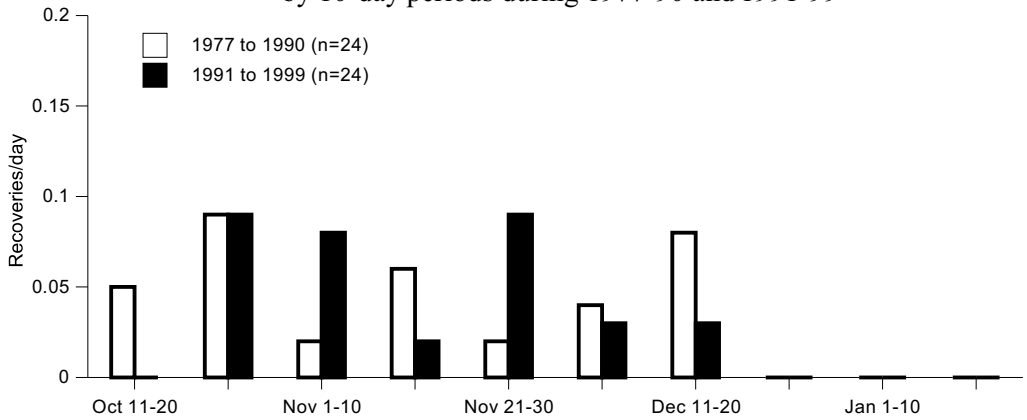
Different season preferences depend on the habitats and species preferred. Diving duck and early-migrant dabbler preferences account for November hunting tendencies, while late season mallard hunting accounts for December preferences. Regardless, primary mallard harvests (reflected by band recoveries) generally have occurred prior to mid-December.



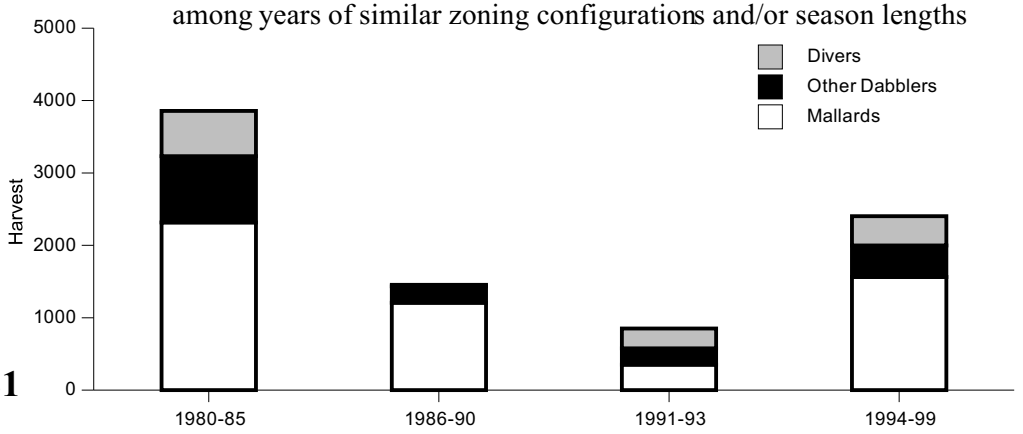
Week most preferred to hunt ducks for hunters who primarily hunted the Thomas Hill region during 1996-99



Numbers of mallard band recoveries per day of open season by 10-day periods during 1977-90 and 1991-99

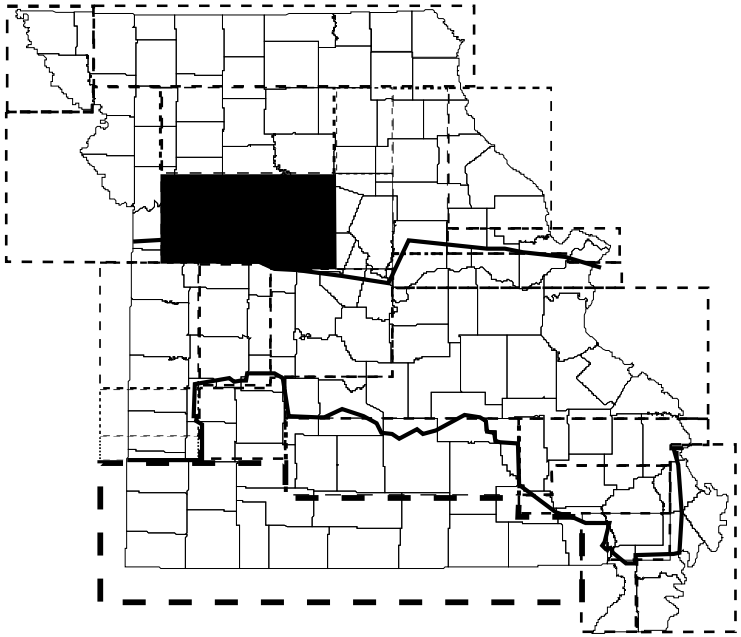


Numbers of mallards, other dabbling ducks, and diving ducks harvested among years of similar zoning configurations and/or season lengths

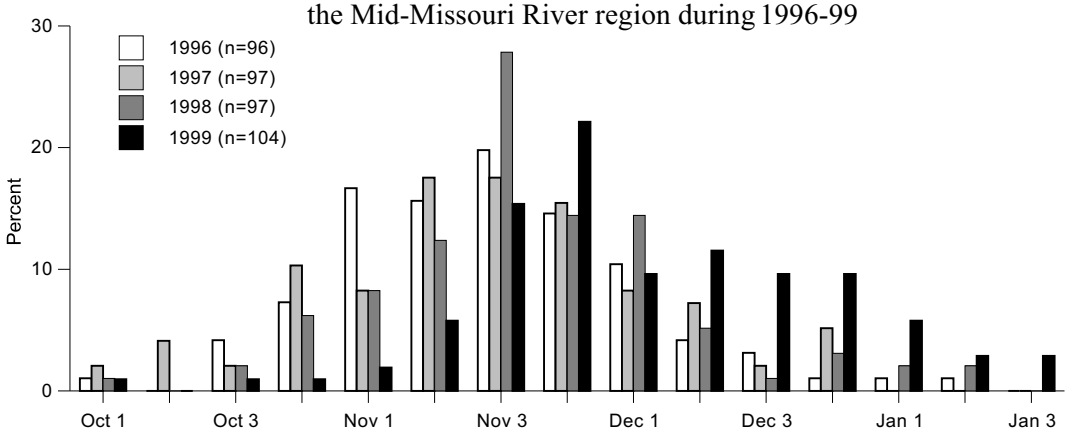


MID-MISSOURI RIVER: Primary waterfowl habitats and hunting areas in this region include the Missouri River and large floodplain wetlands, such as Dalton Cutoff, Sunshine Lake, and Jackass Bend. A notable addition to the habitat base was Grand Pass CA (Tract 1 restoration completed in 1988 and Tract 2 completed in 1990), which complements the traditional managed areas, Swan Lake and Fountain Grove to the north (Fountain Grove region). Although managed largely as a shallow water (6-18" deep) and early successional wetland complex, Grand Pass' proximity to the Missouri River ensures later season waterfowl use and hunting opportunity. The Mid-Missouri River region has accounted for 4-7% of the statewide duck harvest (40-70% mallards).

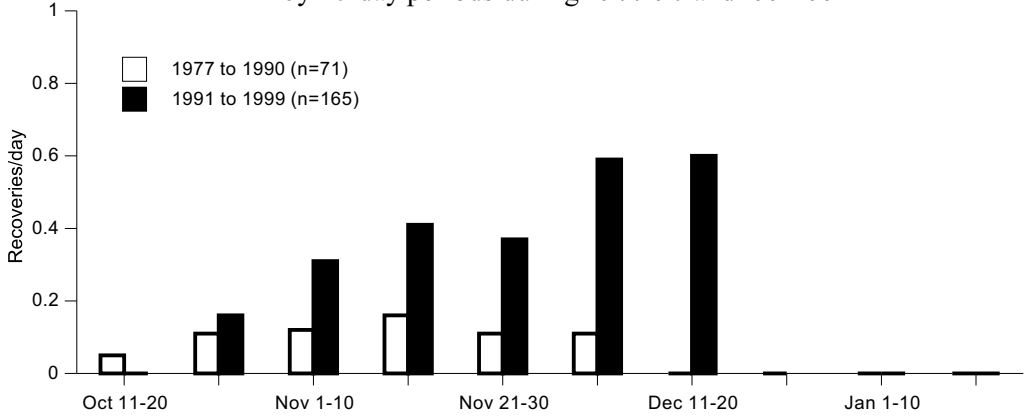
Hunter preferences for season timing were primarily before December until 1999 when their opinions shifted in favor of late November and December weeks. Band recoveries reflect the later nature of duck hunting (at least mallards) in this region (3 band recoveries during 2 days of hunting during 21-31 December 1991-99 were not included due to small sample size).



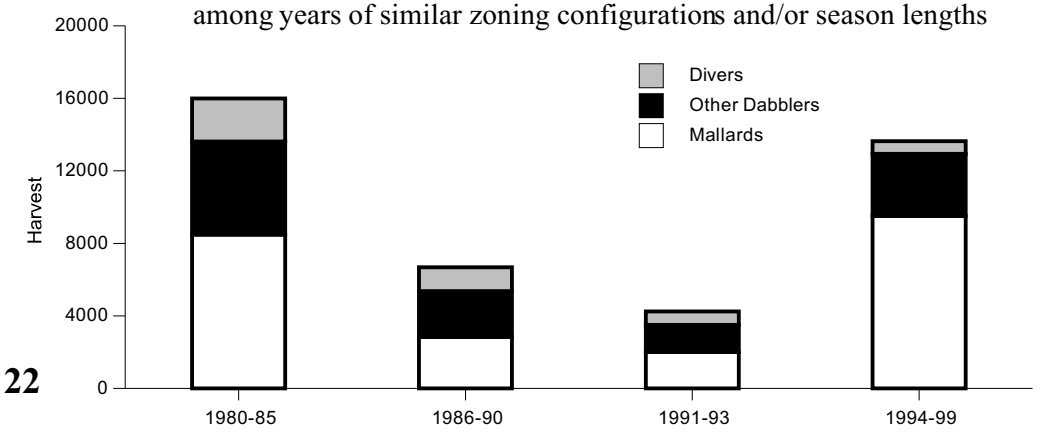
Week most preferred to hunt ducks for hunters who primarily hunted the Mid-Missouri River region during 1996-99



Numbers of mallard band recoveries per day of open season by 10-day periods during 1977-90 and 1991-99

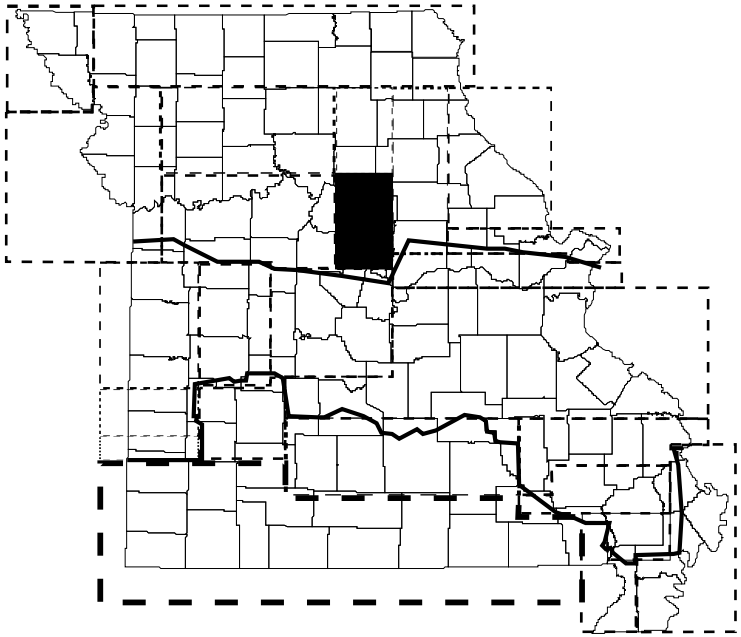


Numbers of mallards, other dabbling ducks, and diving ducks harvested among years of similar zoning configurations and/or season lengths

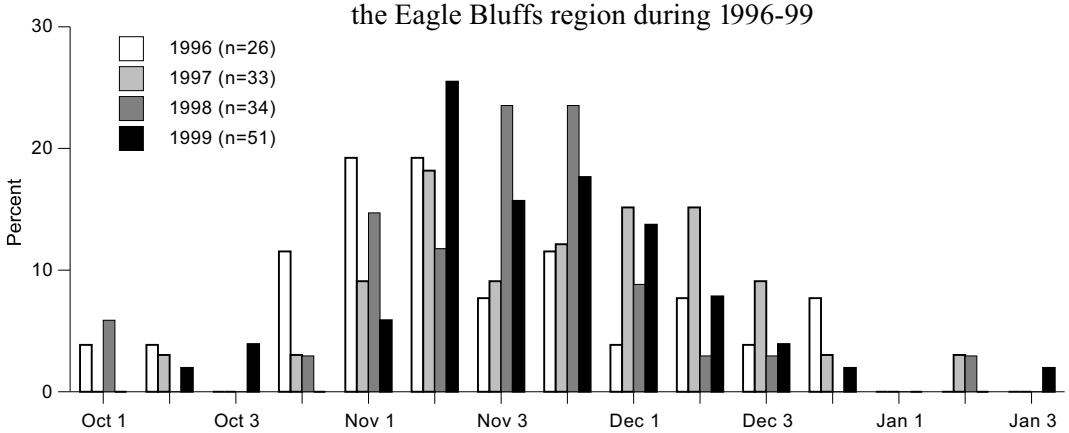


EAGLE BLUFFS: Until development of Eagle Bluffs CA (restoration completed in 1994), primary habitats in Central Missouri were the Missouri River and limited floodplain wetlands. Diving duck and early migrant dabbler hunting predominated. Following the Great Flood of 1993, additional floodplain lands were acquired or placed in easements with the result being substantial increases in wetland potential on Marion Bottoms, Plowboy Bend, Overton Bottoms, Jameson Island, and Lisbon Bottoms. Although these areas do not provide annual, predictable wetlands, periodic wet falls (e.g. 1998) provide much waterfowl and waterfowl hunting opportunity. Addition of managed wetlands appear to have dramatic impacts on hunting opportunity; the proportion of the statewide harvest increased from <1% to >2% after 1994 and the magnitude of harvest increased by 300%.

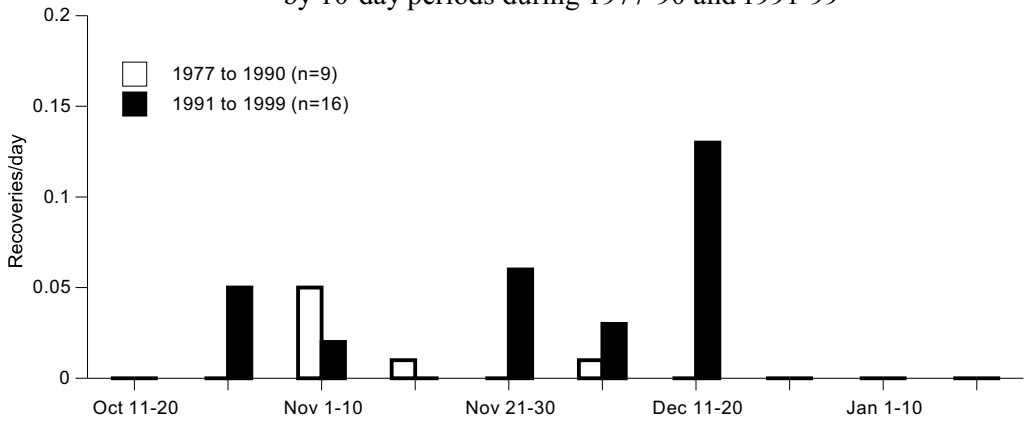
Although preferences for hunting shifted somewhat after recent mild winters, most hunters in this part of Missouri prefer weeks prior to mid-December. Limited band recoveries were available because of low mallard harvest prior to the 1990s; however, bands reported during the last decade reflect generally later harvest. The Eagle Bluffs region has been on the boundary of the Middle Zone since 1991.



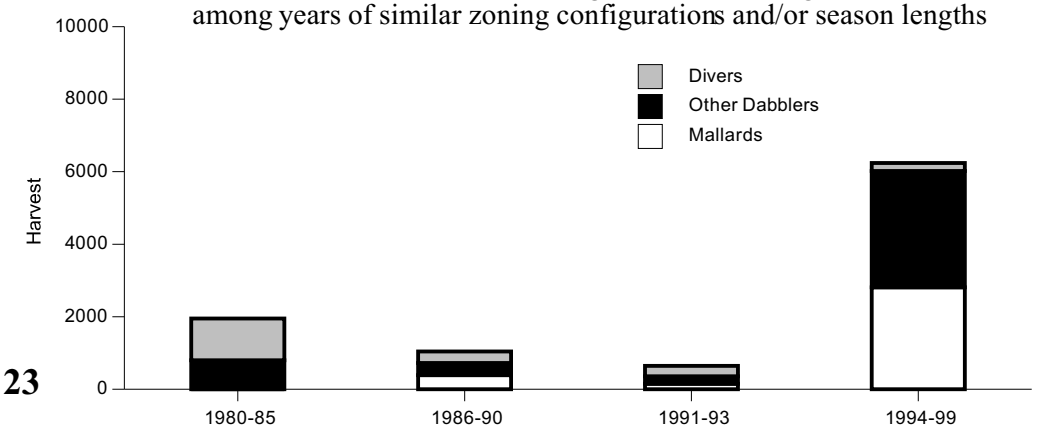
Week most preferred to hunt ducks for hunters who primarily hunted the Eagle Bluffs region during 1996-99



Numbers of mallard band recoveries per day of open season by 10-day periods during 1977-90 and 1991-99

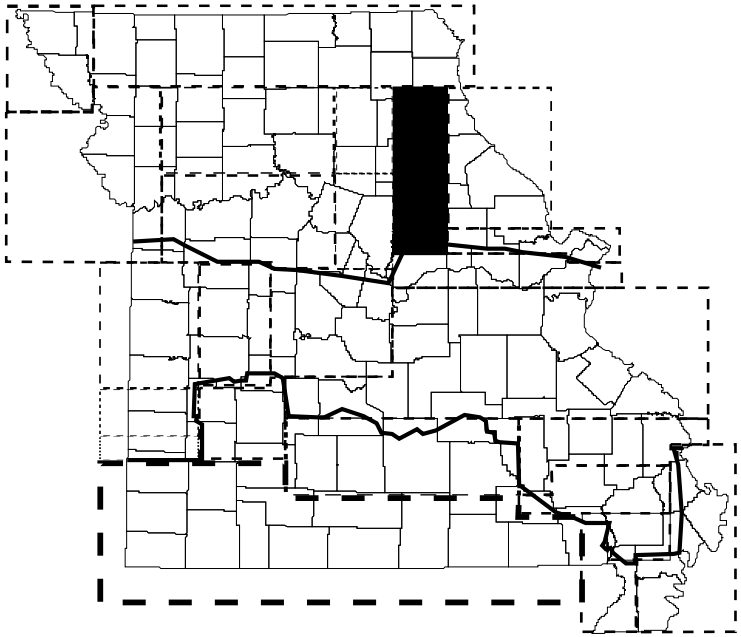


Numbers of mallards, other dabbling ducks, and diving ducks harvested among years of similar zoning configurations and/or season lengths

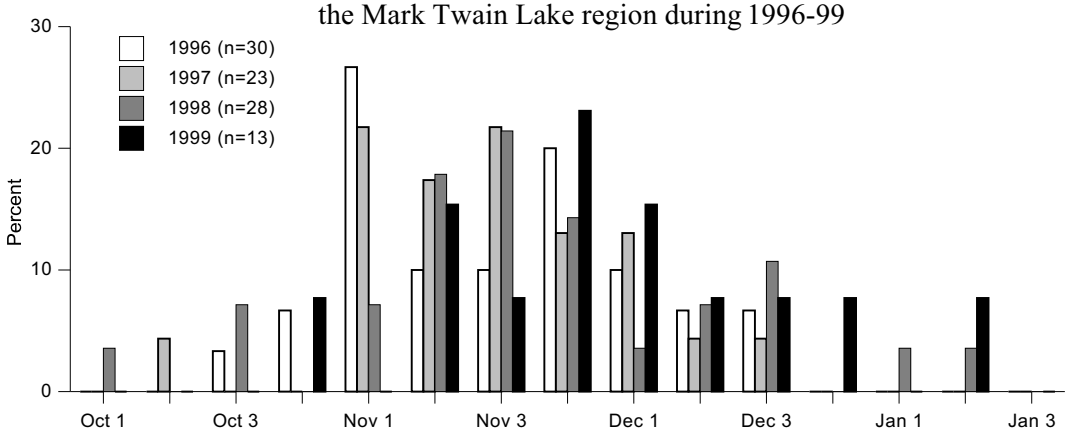


MARK TWAIN LAKE: Prior to the mid-80s, much of the waterfowl habitat in this region was associated with the Salt River floodplain. After inundation of the reservoir, periodic flooding provided considerable hunting opportunity in some years (e.g. 1983, 1985, and 1998), while normal lake levels ensured moderate hunting in others. This region has accounted for 2-5% of Missouri's duck harvest (30-70% mallards).

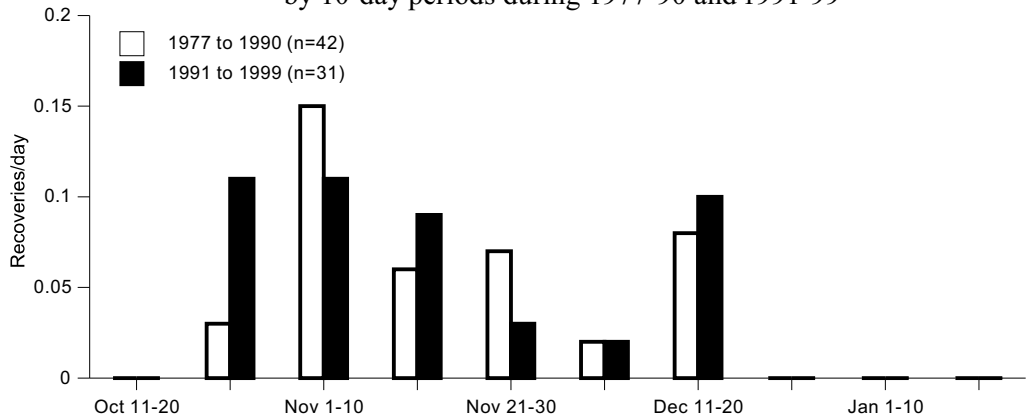
Attitudes about the preferred week to hunt have been before mid-December with greater numbers of hunters preferring late November and December in recent years. An interesting trend in mallard band recoveries, which consistently occurred between decades, has been an early season peak (timed with migration events) followed by a late season, secondary peak (likely mallard concentration during freeze-up).



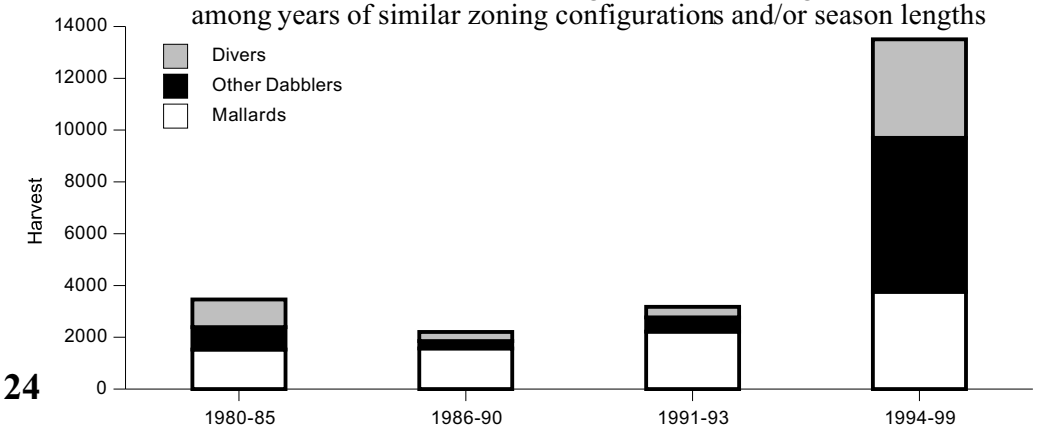
Week most preferred to hunt ducks for hunters who primarily hunted the Mark Twain Lake region during 1996-99



Numbers of mallard band recoveries per day of open season by 10-day periods during 1977-90 and 1991-99

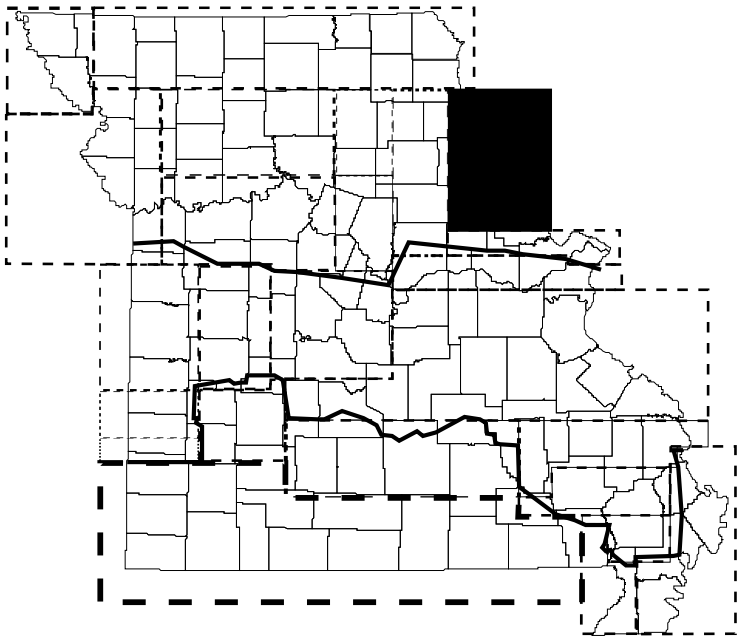


Numbers of mallards, other dabbling ducks, and diving ducks harvested among years of similar zoning configurations and/or season lengths

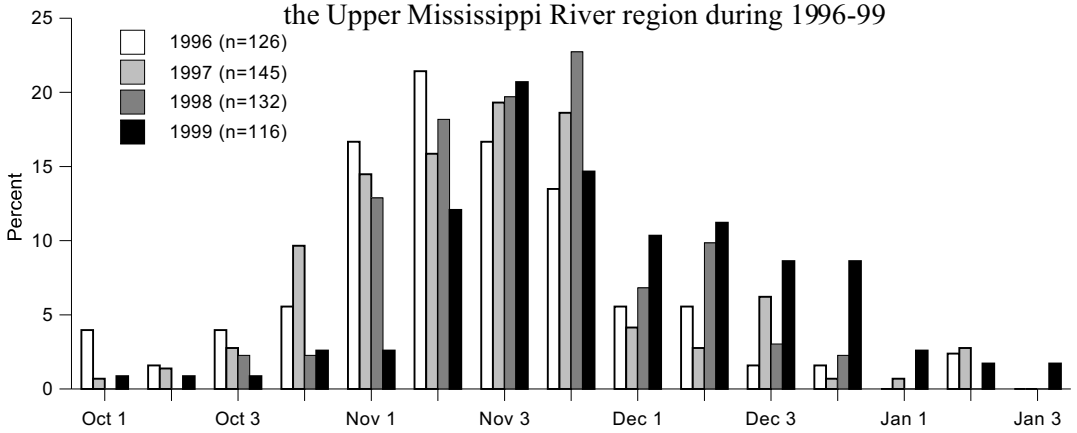


UPPER MISSISSIPPI RIVER: The "Upper Miss" is one of the most traditional migration corridors and hunting locations in Missouri and the Midwest. Habitats range from open river to backwater sloughs to managed shallow wetlands. The region has consistently accounted for 8-13% (40-55% mallards) of the statewide duck harvest.

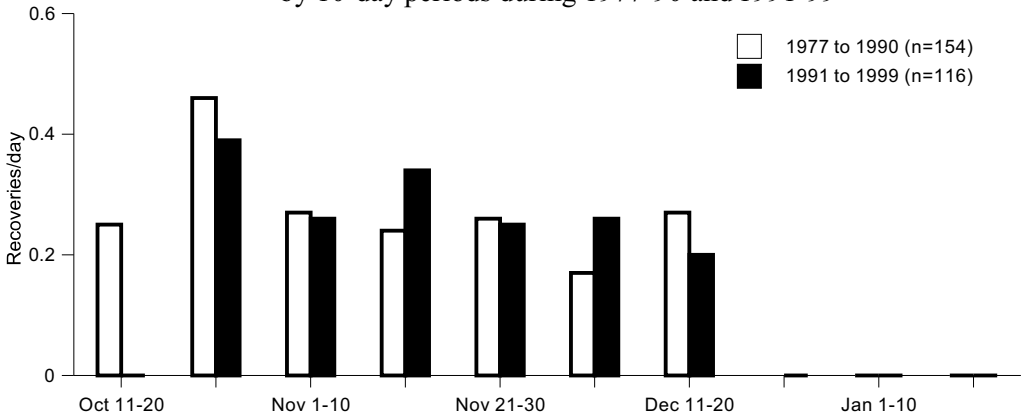
Weeks most preferred to hunt occur through November but are dramatically lower by early December. Mallard harvest (indicated by band recoveries) is the greatest during initial migration periods in late October then declines to a relatively high and consistent level through season's end.



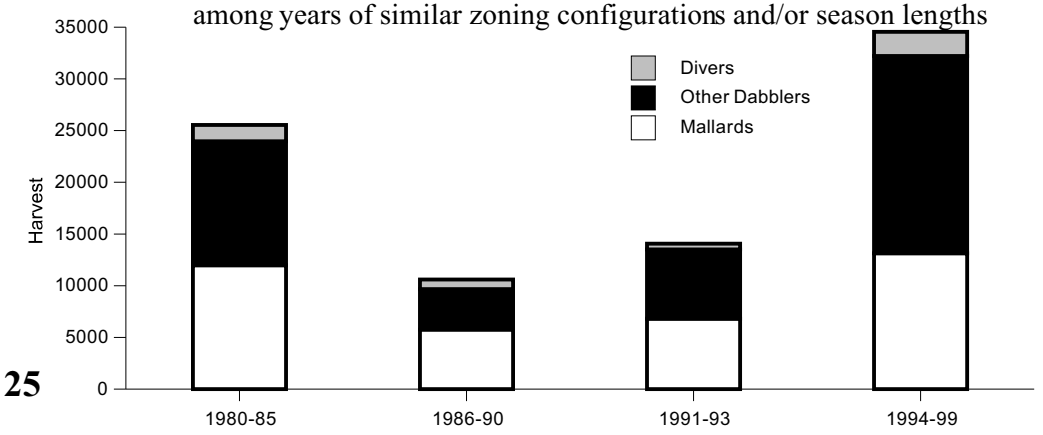
Week most preferred to hunt ducks for hunters who primarily hunted the Upper Mississippi River region during 1996-99



Numbers of mallard band recoveries per day of open season by 10-day periods during 1977-90 and 1991-99

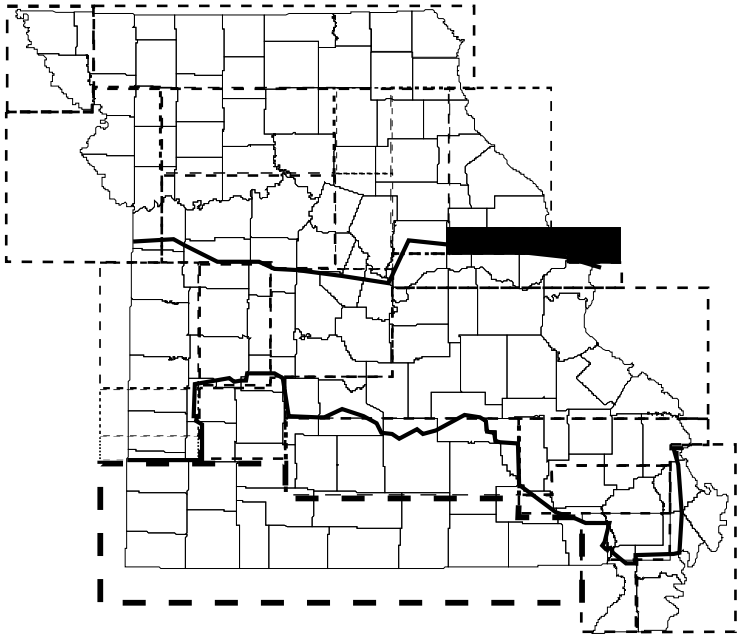


Numbers of mallards, other dabbling ducks, and diving ducks harvested among years of similar zoning configurations and/or season lengths

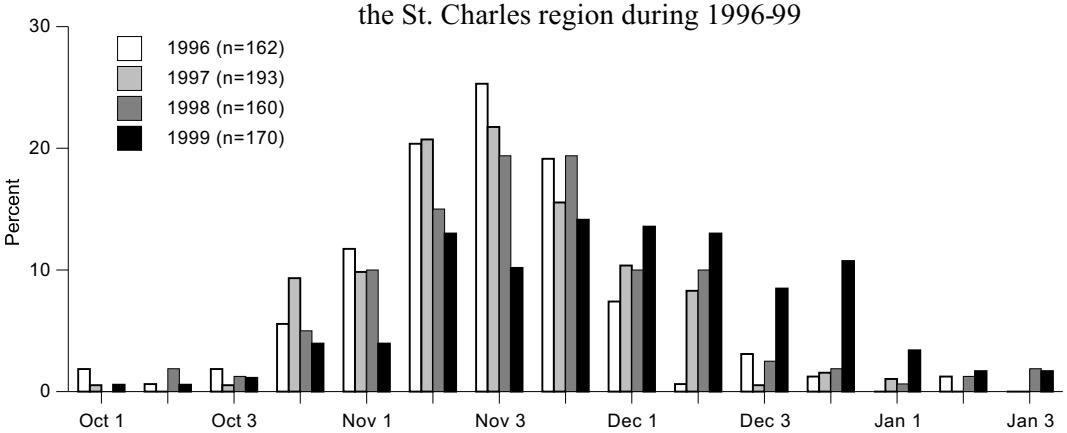


ST. CHARLES: Perhaps the most important historical complex of wetlands in Missouri, this region is located at the confluence of the Mississippi, Illinois, and Missouri rivers. Although limited wetland habitat exists on managed public land, the impact of traditional private wetlands is greater than anywhere else in the state. This region has been on the boundary of the North and Middle zones since 1991. An average 7-10% of the statewide duck harvest occurs in the St. Charles region (50-60% mallards).

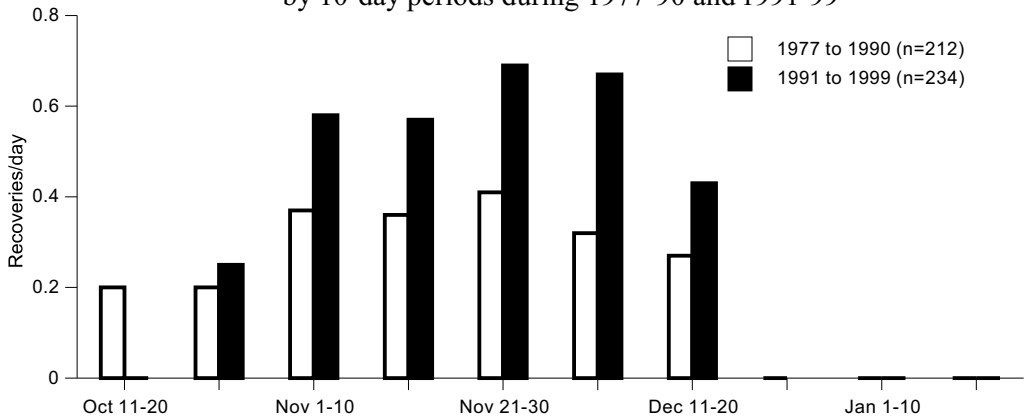
More than 90% of the weeks most preferred to hunt ducks occurred prior to mid-December until the mild fall/winter of 1999 prompted later views about the best weeks to hunt. The trend of mallard band recoveries favoring November though early December with a moderate decline into mid-December has been consistent between decades. Compared to most other regions of Missouri, mallard band recovery rates are highest in East-Central Missouri.



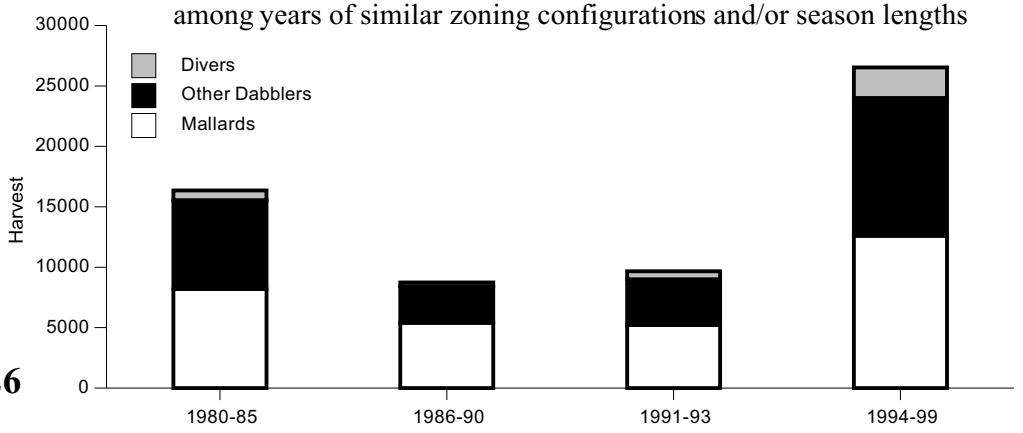
Week most preferred to hunt ducks for hunters who primarily hunted the St. Charles region during 1996-99



Numbers of mallard band recoveries per day of open season by 10-day periods during 1977-90 and 1991-99

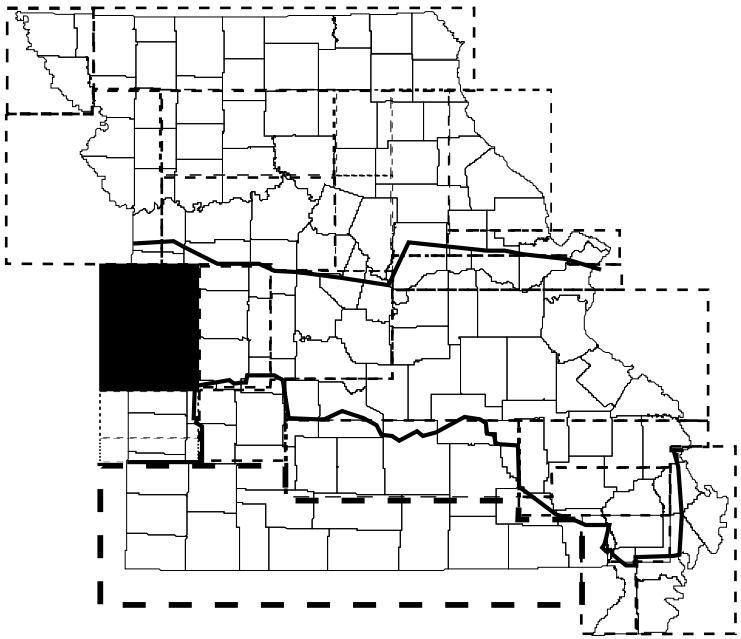


Numbers of mallards, other dabbling ducks, and diving ducks harvested among years of similar zoning configurations and/or season lengths

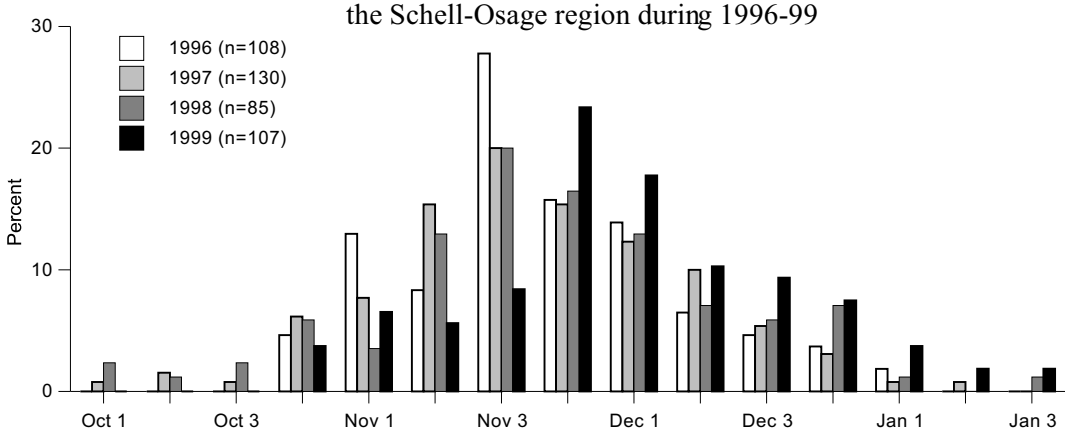


SCHELL-OSAGE: Traditional managed wetlands on Schell-Osage CA, initially were complemented as Truman reservoir flooded in the late 1970s. This region includes the majority of the flood pool of the reservoir. Periodic flooding, however, resulted in considerable damage to Schell-Osage wetlands (A-Pool timber in particular), which reduced wetland quality to some degree. This deteriorated condition was compensated somewhat by substantial private wetland development in the upper reaches of Truman Reservoir. Further, wetland restoration on Four Rivers CA (completed in 1996, with additional development scheduled) and acquisition and scheduled development of Settles Ford CA continue to add to the regional wetland complex.

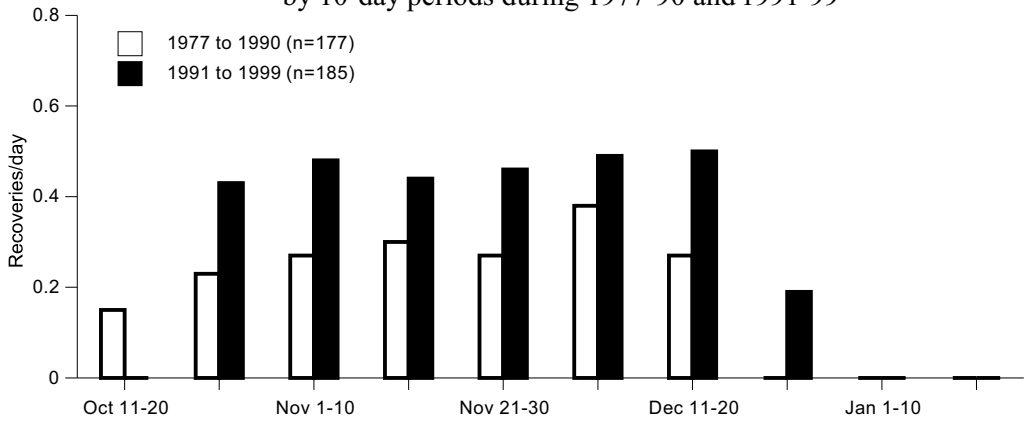
The result of maintained and expanded wetland habitat is a relatively constant 10% of the statewide harvest (comprised of 50-70% mallards). Combined, the Schell-Osage and Truman regions, account for at least 20% of Missouri's duck harvest annually. Hunting preferences for November through much of December are consistent with the constant rate of mallard band recoveries from late October through mid-December.



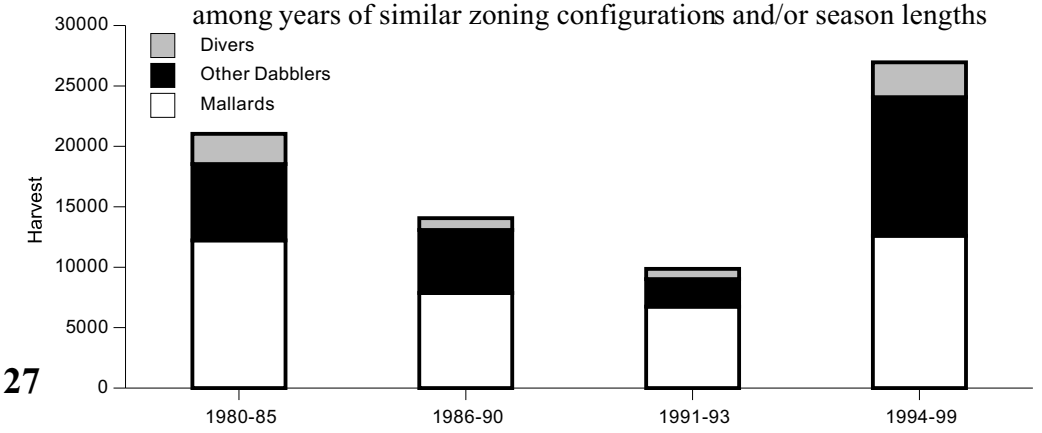
Week most preferred to hunt ducks for hunters who primarily hunted the Schell-Osage region during 1996-99



Numbers of mallard band recoveries per day of open season by 10-day periods during 1977-90 and 1991-99



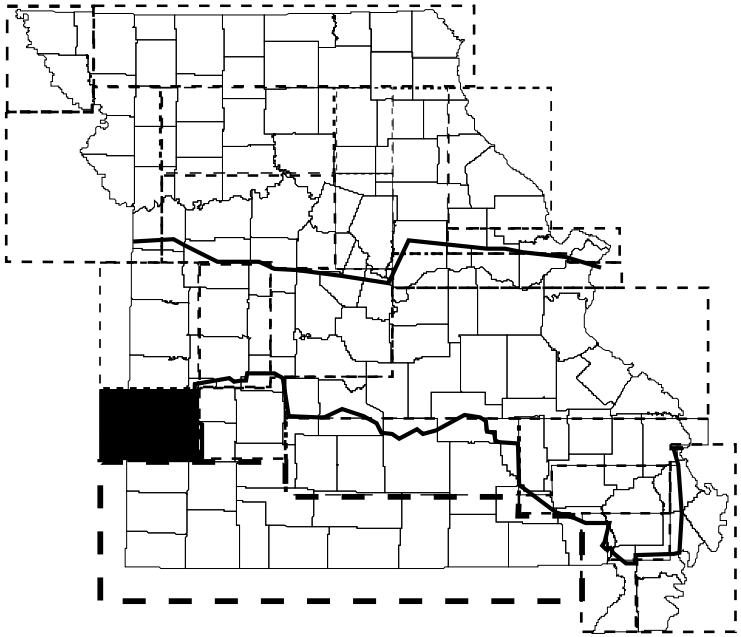
Numbers of mallards, other dabbling ducks, and diving ducks harvested among years of similar zoning configurations and/or season lengths



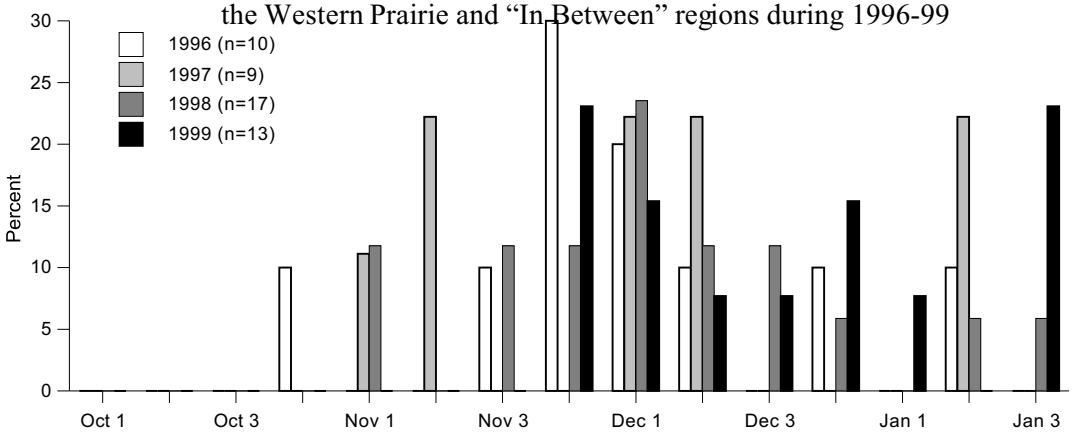
WESTERN PRAIRIE and "IN BETWEEN":

A distinction was made between the Western Prairie region and a region termed "In Between" because of changes in zone boundaries over the last 20 years that were intended to accommodate disparate views about the best duck season timing. The widely differing views are due to extremes in hunting styles that range from earlier season hunting on small wetlands and ponds versus late season trips on large irrigation reservoirs and small rivers. Most wetland habitat occurs on private land except for small reservoirs on Department areas (e.g. Bushwhacker Lake CA and Shawnee Trail CA). The 2 regions account for <1.5% of the statewide harvest.

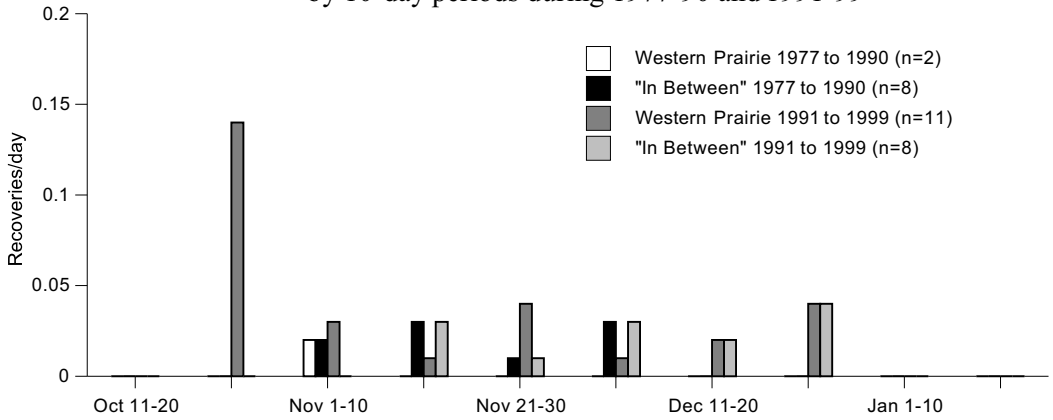
Because of a general lack of wetland habitat in the region, large or predictable numbers of ducks are not as common as areas of Missouri with managed public and private wetlands. Despite the small numbers of hunters in the region, attitudes are quite variable with >10% preferring weeks from late October through January. Undoubtedly, each view of the best season is legitimate for particular hunting styles, species, and traditions. Changes in zone boundaries have been made in response to hunters' desires for specific hunting opportunities. In light of the wide range of preferences, it will be difficult to accommodate all views about the best duck season in this region of Missouri.



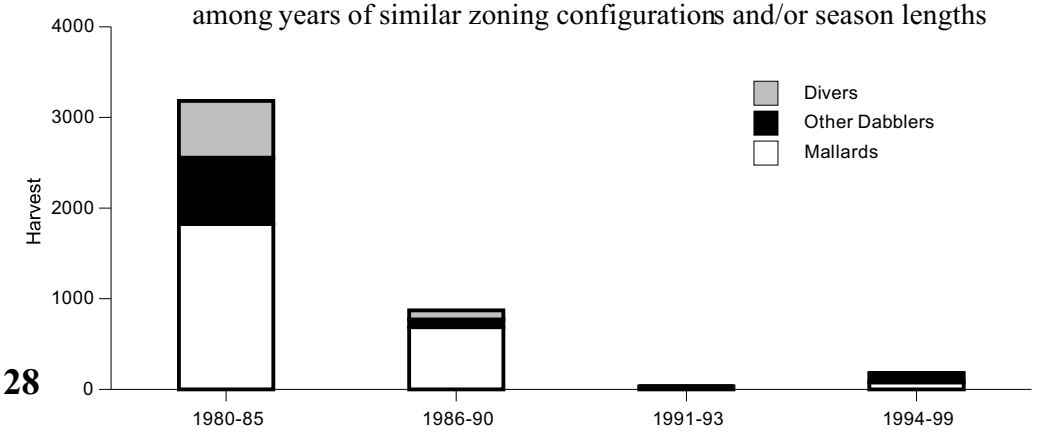
Week most preferred to hunt ducks for hunters who primarily hunted the Western Prairie and "In Between" regions during 1996-99



Numbers of mallard band recoveries per day of open season by 10-day periods during 1977-90 and 1991-99

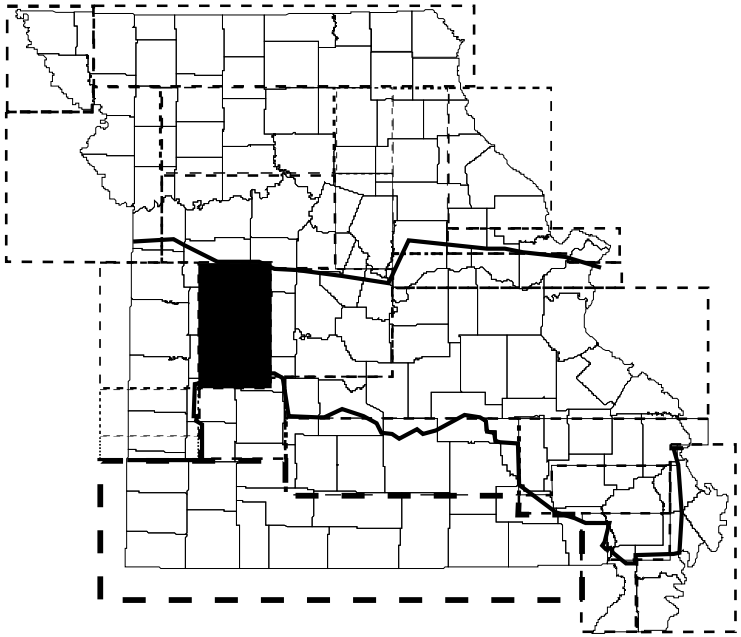


Numbers of mallards, other dabbling ducks, and diving ducks harvested among years of similar zoning configurations and/or season lengths

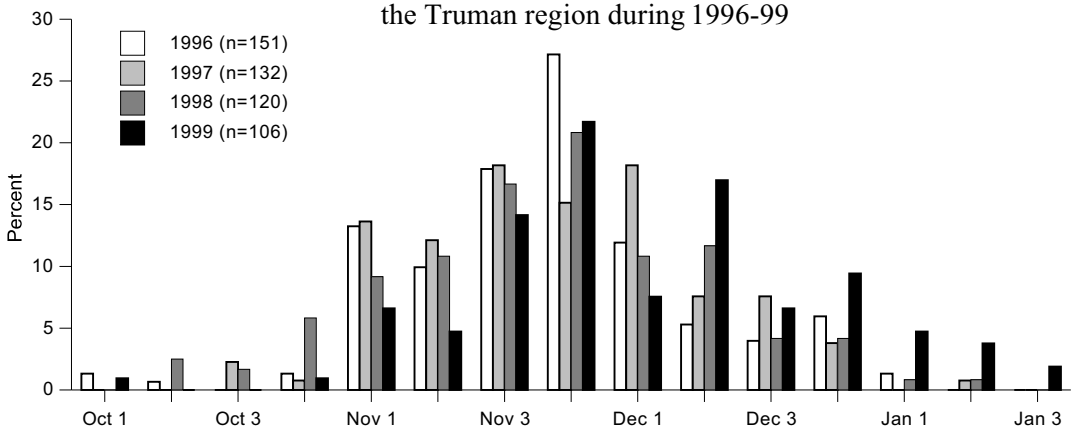


TRUMAN: With completion of Truman Reservoir in the late 1970s, the distribution of mallard harvest in Missouri changed dramatically. The reservoir substantially increases in acreage as water levels rise above flood pool (much of this associated with the Schell-Osage region). Along with an increasing number of private wetlands and additional public wetlands to the west, this part of Missouri represents one of the major wetland complexes in the state. The region has accounted for 10-18% of the statewide duck harvest since 1980 (50-70% mallards). Preferred weeks to hunt range from early November to late December, likely due to hunting preferences for shallow to deep water areas.

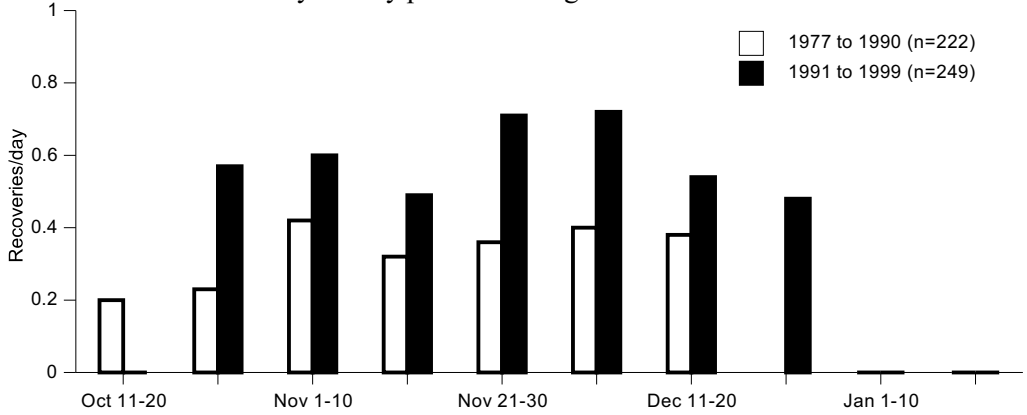
Prior to 1980, this region ranked 6th in the number of mallard band recoveries in the state. After Truman Reservoir was established, the region ranked 1st for the following 2 decades. The temporal distribution of band recoveries shows consistent hunting opportunity from initial migrations in late October to late season mallard concentrations in late December.



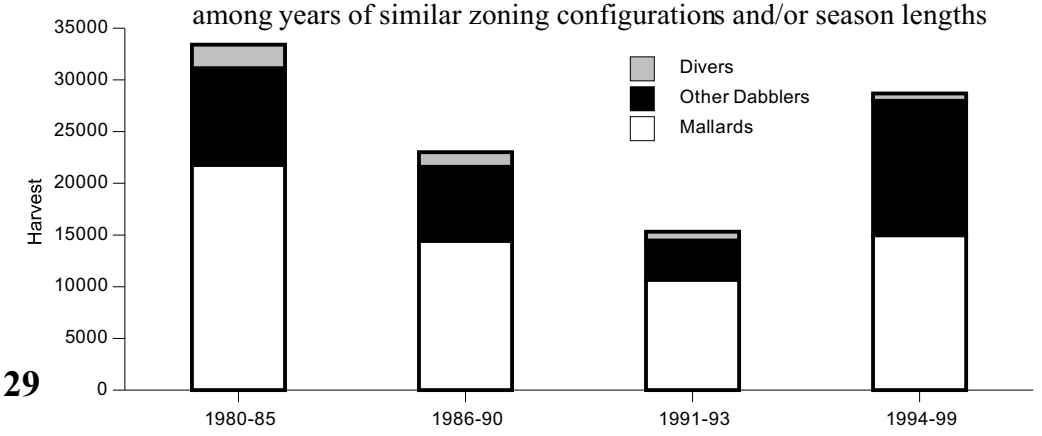
Week most preferred to hunt ducks for hunters who primarily hunted the Truman region during 1996-99



Numbers of mallard band recoveries per day of open season by 10-day periods during 1977-90 and 1991-99



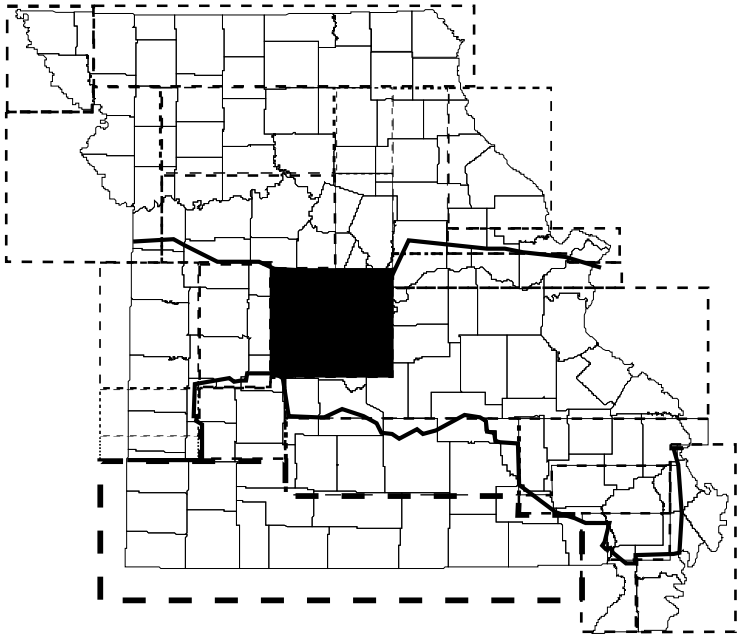
Numbers of mallards, other dabbling ducks, and diving ducks harvested among years of similar zoning configurations and/or season lengths



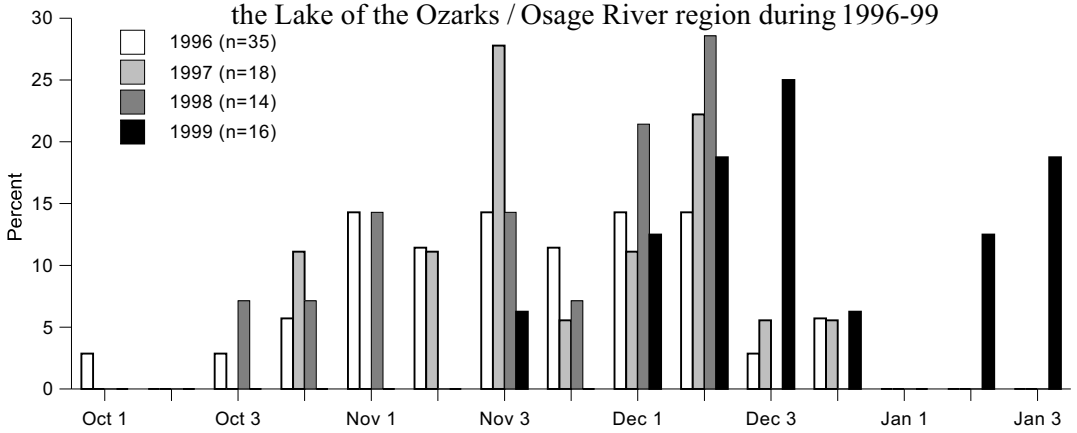
LAKE OF THE OZARKS / OSAGE RIVER:

Because of deep water (reservoir) or flowing water (Osage River), this region offers late season hunting opportunity for mallards, which often remain well into the winter. Addition of the Middle Zone and increased season length to 60 days since 1997 have provided more late season hunting opportunity. A range of 2-4% of the hunters and harvest occurs in the region. Mallard harvest predominates, accounting for 60-80% of the region's duck take.

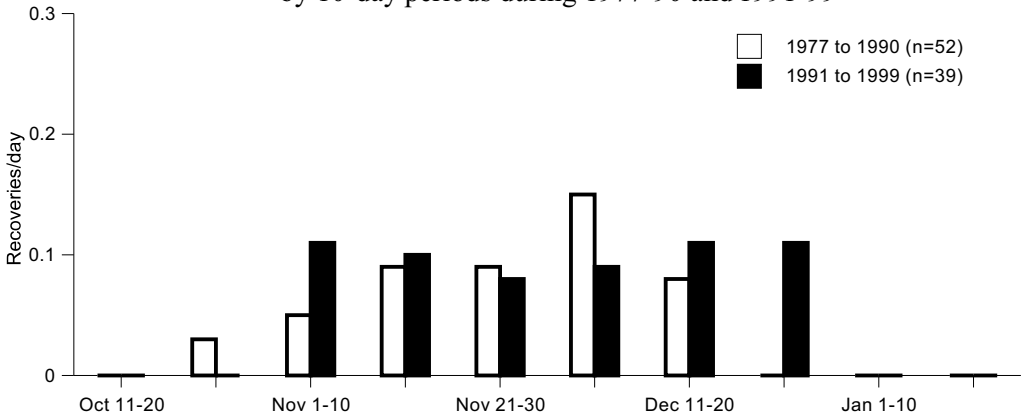
Attitudes among hunters have shifted more dramatically in this region than any other portion of Missouri; this likely has been the result of recent years' mild winter weather. Virtually no hunters' preferred weeks occurred prior to late November by 1999. Mallard harvest, however, has been surprisingly consistent from early November through December (based on band recovery timing).



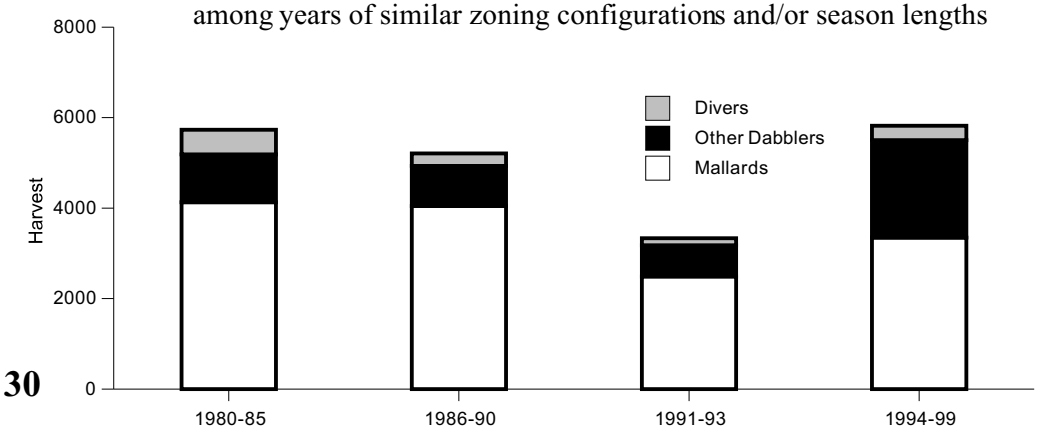
Week most preferred to hunt ducks for hunters who primarily hunted the Lake of the Ozarks / Osage River region during 1996-99



Numbers of mallard band recoveries per day of open season by 10-day periods during 1977-90 and 1991-99

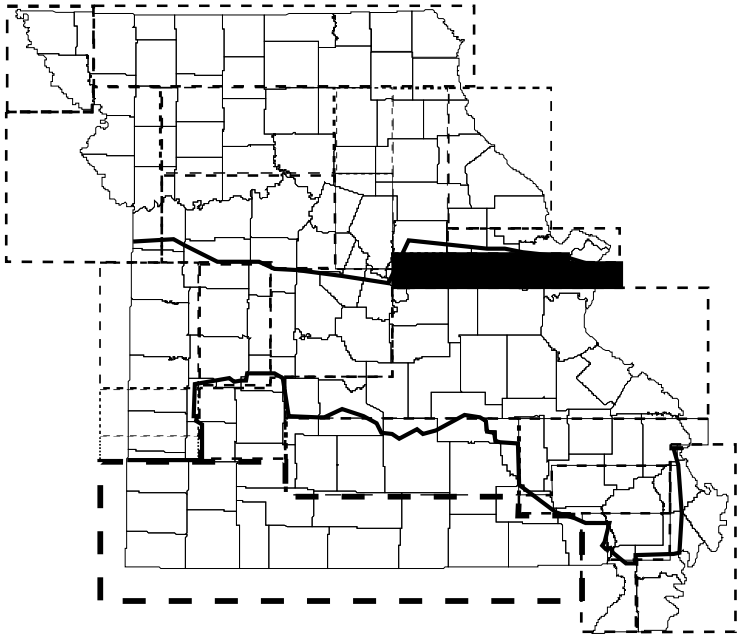


Numbers of mallards, other dabbling ducks, and diving ducks harvested among years of similar zoning configurations and/or season lengths

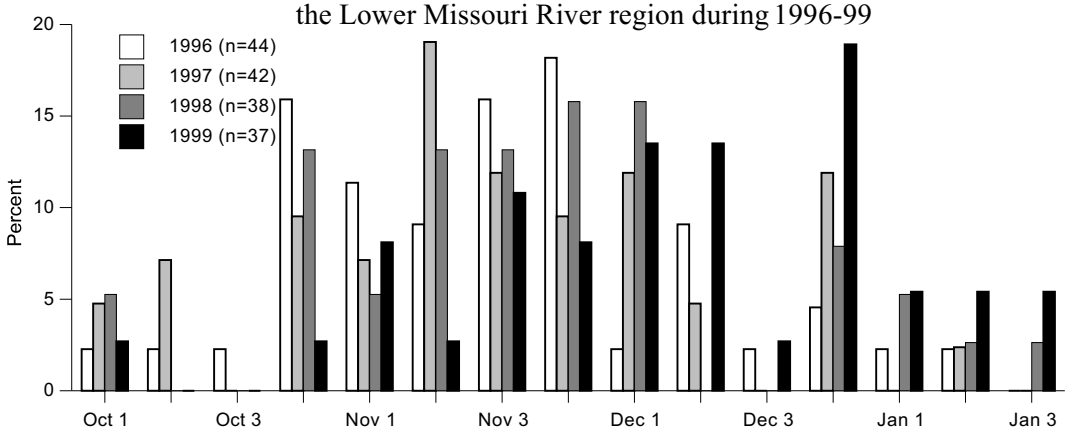


LOWER MISSOURI RIVER: A narrow and altered (levees, wing dams, etc.) Missouri River and floodplain provides only limited wetlands for ducks and duck hunters. Early season duck use primarily is by wood ducks, while mallards predominate as shallow wetlands freeze. The region was included in the North Zone until zones were reconfigured in 1991, after which the Lower Missouri River region was incorporated into the Middle Zone. The region accounted for 1-4% of the statewide duck harvest (30-70% mallards) during the last 2 decades. After the early 1980s, the proportion and magnitude of harvest both declined.

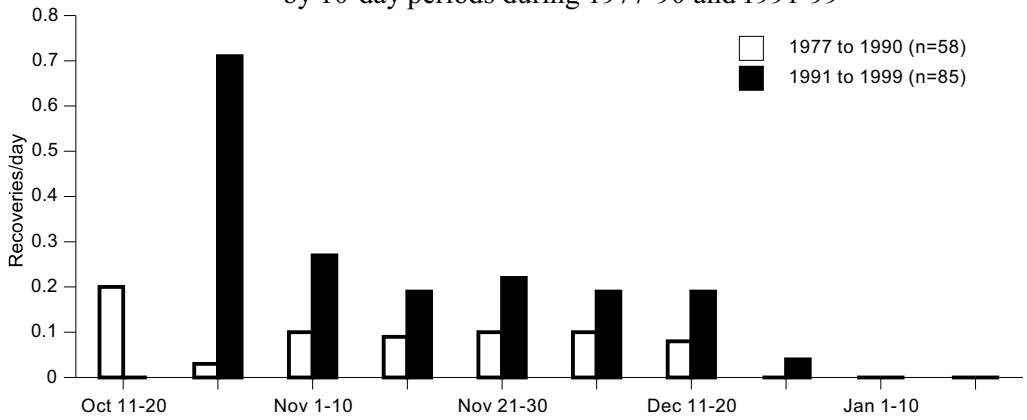
Preferences for duck hunting are extremely varied. Preferred weeks likely correspond to early season wood duck opportunity, late October diving duck migrations, early November mallard arrival, and December freeze-up. Except for late October (corresponding to opening days and initial migrations), mallard harvest has been relatively consistent until mid-December.



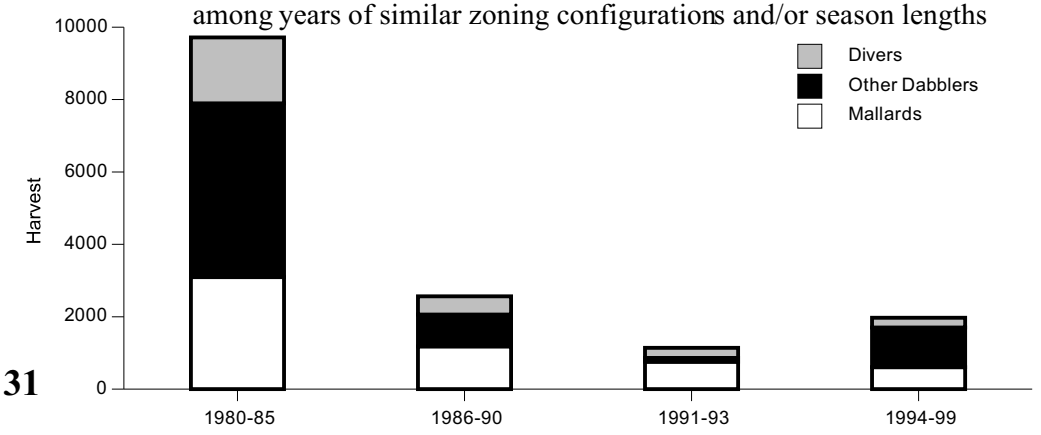
Week most preferred to hunt ducks for hunters who primarily hunted the Lower Missouri River region during 1996-99



Numbers of mallard band recoveries per day of open season by 10-day periods during 1977-90 and 1991-99

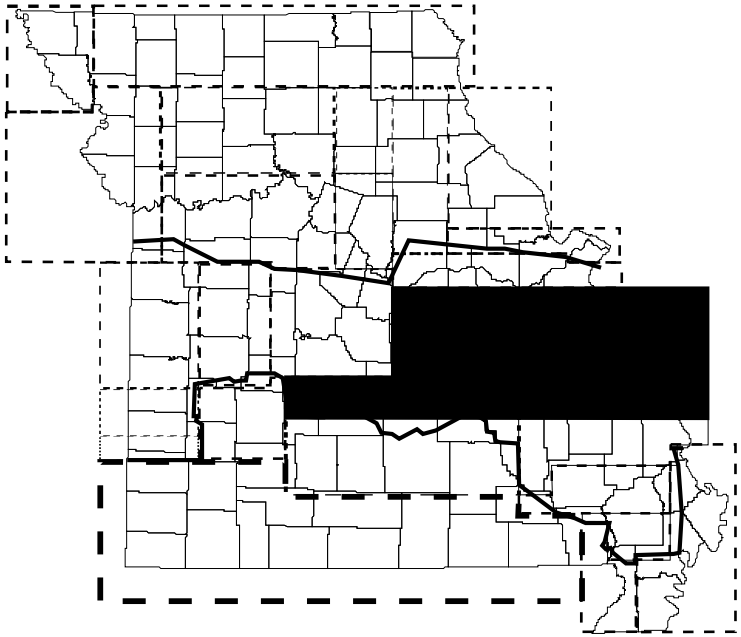


Numbers of mallards, other dabbling ducks, and diving ducks harvested among years of similar zoning configurations and/or season lengths

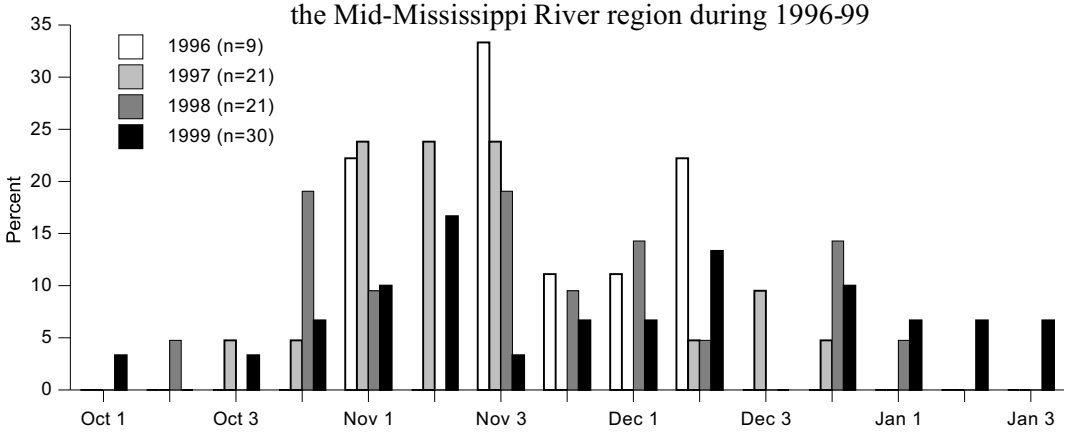


MID-MISSISSIPPI RIVER: The primary wetland habitats in this region are associated with the Mississippi River and floodplain. Wetlands are limited along this portion of the Mississippi River compared to the Bootheel (upper Mississippi Alluvial Valley) and above St. Louis (locks and dams). Portions of the northern Ozarks are included in this region and separated from the remaining Ozarks because of the location of the zone boundary since 1991 (although of little consequence for duck harvest). On average, 1-3% of Missouri's duck harvest has occurred in this region during the last 20 years (<50% mallards). Harvest during the 1980s was greater than harvest since.

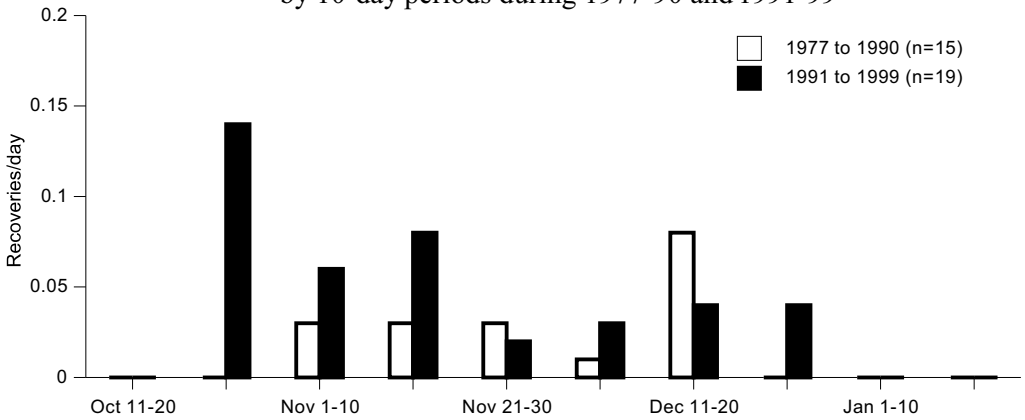
Hunters' attitudes about the best week to hunt generally were earlier in 1996-1997 than the following 2 years. Regardless of the year, however, opinions about the preferred week have been quite variable. Mallard harvest generally has favored early season (prior to late November), although consistent numbers of mallard bands have been reported through December.



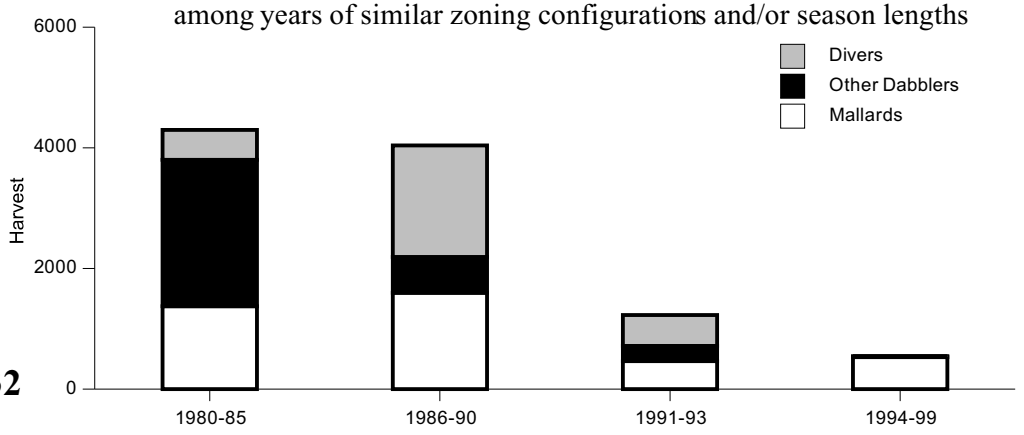
Week most preferred to hunt ducks for hunters who primarily hunted the Mid-Mississippi River region during 1996-99



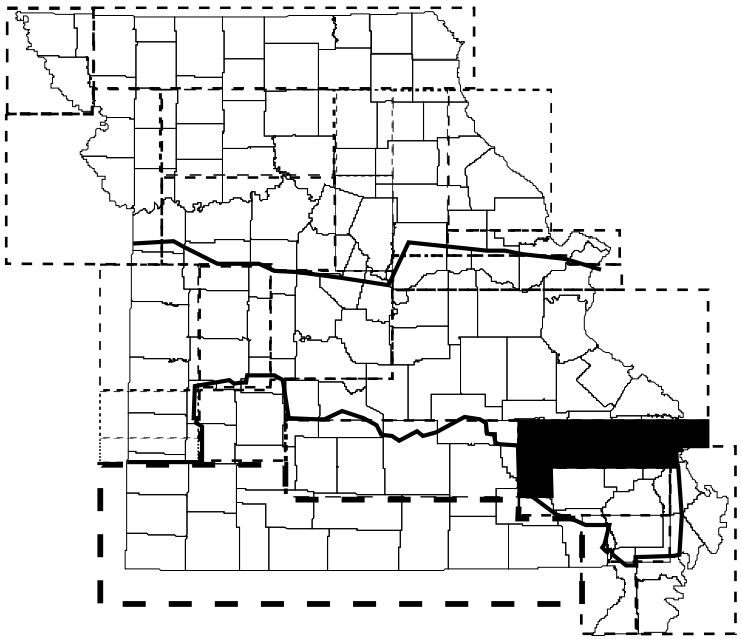
Numbers of mallard band recoveries per day of open season by 10-day periods during 1977-90 and 1991-99



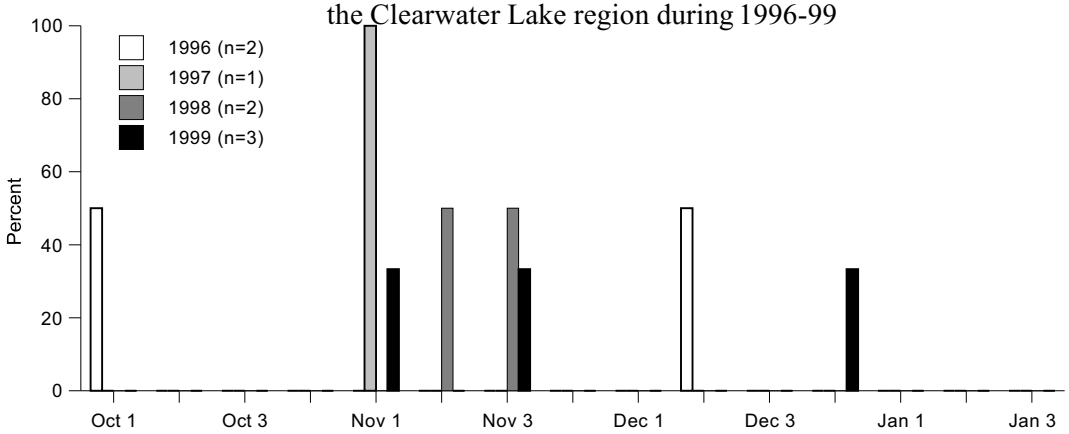
Numbers of mallards, other dabbling ducks, and diving ducks harvested among years of similar zoning configurations and/or season lengths



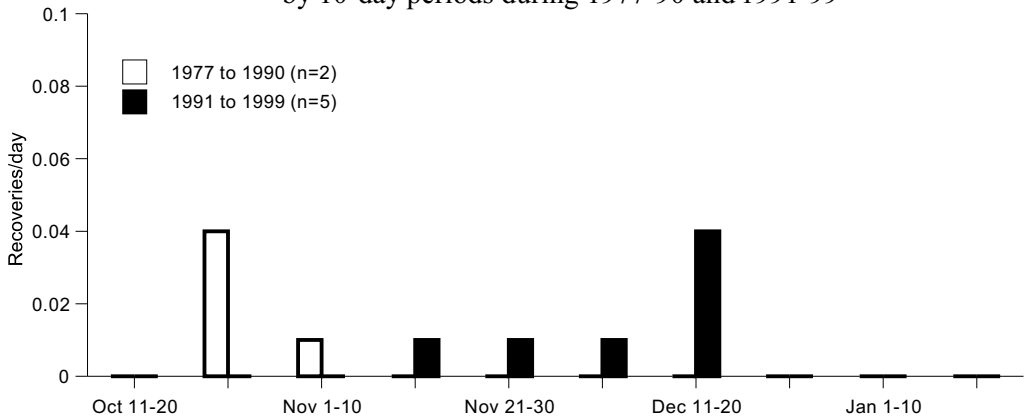
CLEARWATER LAKE: This region is separated from others because, unlike adjacent zones, changes in zone boundaries placed Clearwater in the North, South, and Middle zones during 1977-99. The primary habitat for waterfowl hunting is Clearwater Lake. Limited numbers of ducks harvested (<1% of the statewide harvest), few band recoveries, and limited survey data preclude generalizations about hunting and harvest trends.



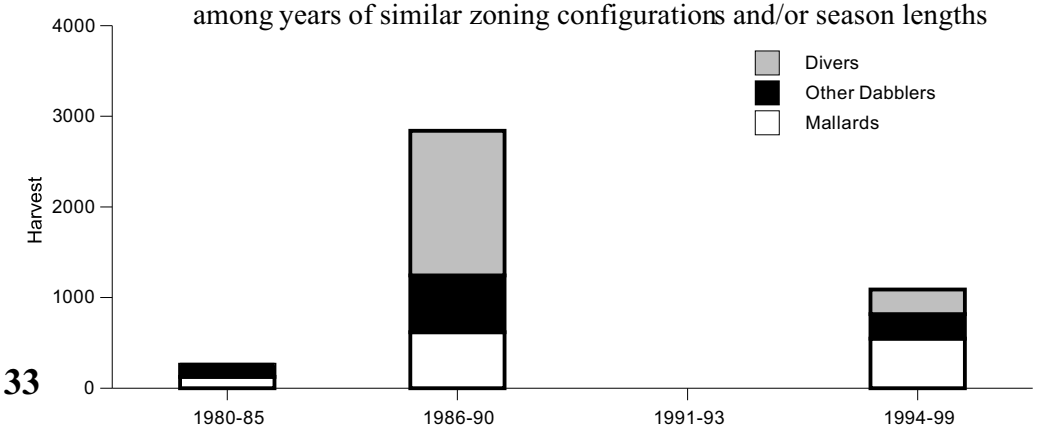
Week most preferred to hunt ducks for hunters who primarily hunted the Clearwater Lake region during 1996-99



Numbers of mallard band recoveries per day of open season by 10-day periods during 1977-90 and 1991-99

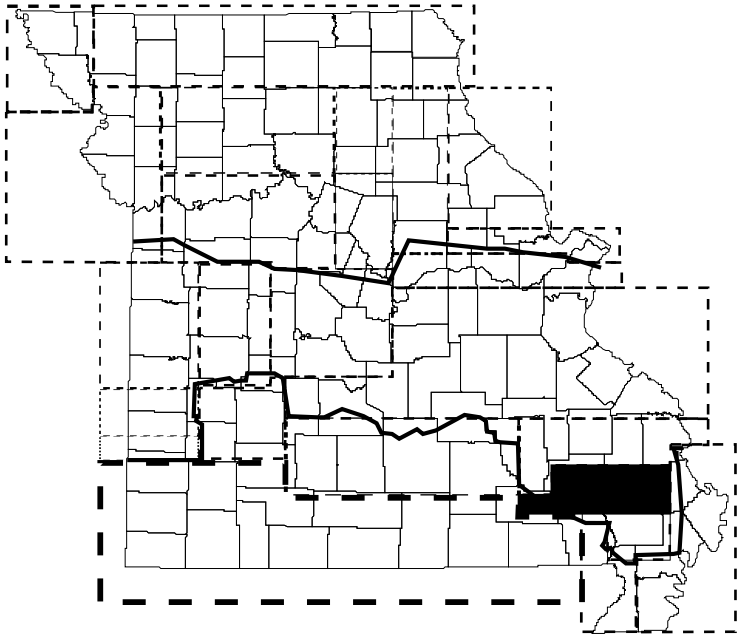


Numbers of mallards, other dabbling ducks, and diving ducks harvested among years of similar zoning configurations and/or season lengths

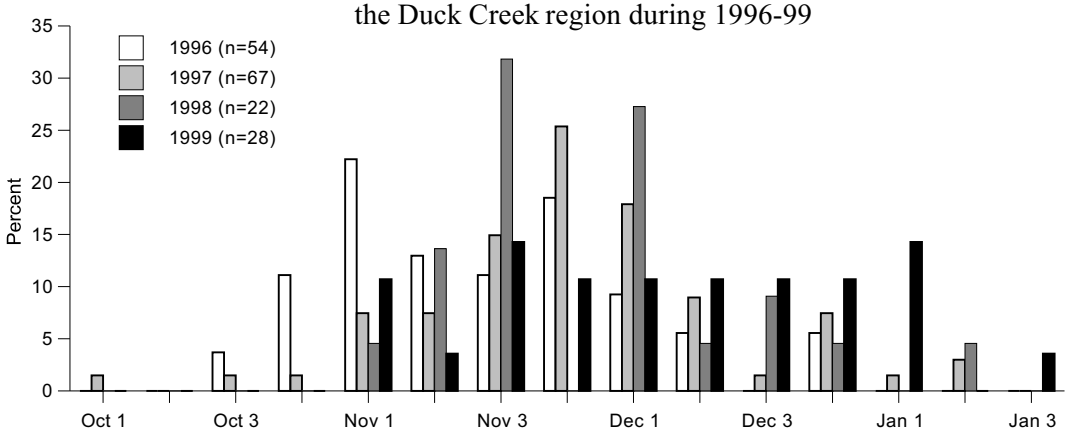


DUCK CREEK: Combined, Duck Creek CA and Mingo NWR (almost 30,000 acres) provide one of Missouri's primary wetland complexes and a key wetland remnant. Flooded bottomland hardwoods are found in few other locations in the state. These shallow wetlands provide important early season habitat for wood ducks and initial mallard migrants as well as late season habitat until freezing conditions limit use of timber habitats. The region accounts for 1.5-4% of the state's duck harvest (55-65% mallards) and a consistent proportion of wood ducks and early migrant dabblers other than mallards. Ring-necked ducks also are commonly taken in this part of Missouri. Duck Creek was in the South Zone during 1977-85 the North Zone during 1986-90, and in the Middle Zone after 1990.

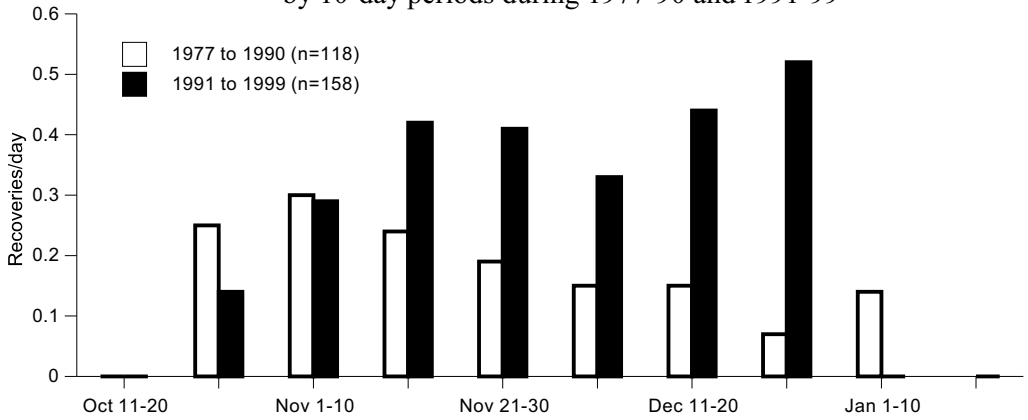
Preferred weeks to hunt generally were prior to mid-December until hunters surveyed after the 1999 season indicated less consistent early season preferences. Following 1999, no single week accounted for more than 15% of the hunting preferences. Although dependent on weather and wetland conditions (including mast production), mallards generally are harvested at a consistent rate through December (based on band recovery data (3 band recoveries during 8 days of hunting during 11-20 January were not included due to small sample size).



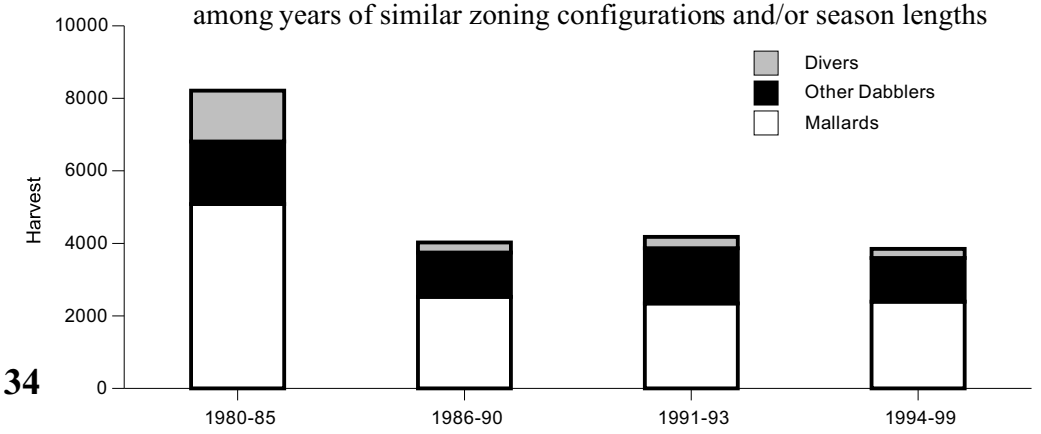
Week most preferred to hunt ducks for hunters who primarily hunted the Duck Creek region during 1996-99



Numbers of mallard band recoveries per day of open season by 10-day periods during 1977-90 and 1991-99

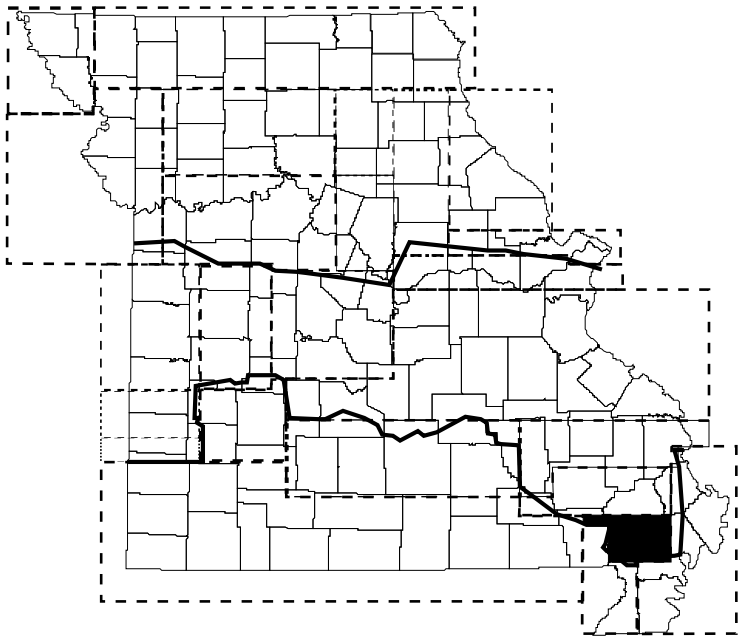


Numbers of mallards, other dabbling ducks, and diving ducks harvested among years of similar zoning configurations and/or season lengths

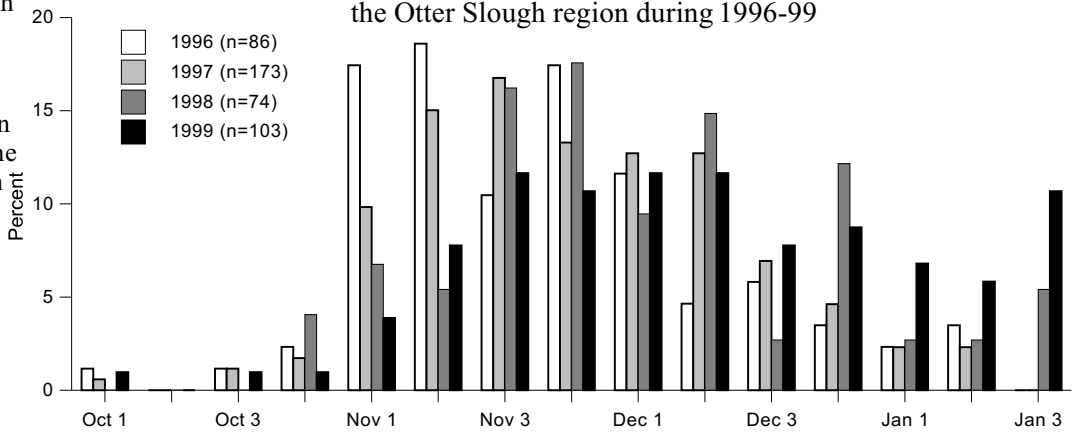


OTTER SLOUGH: Acquisition and expansion of Otter Slough CA during the 1980s and 1990s (final restoration of 1800 acres completed in 1996) along with increasing rice acreage gradually changed the amount of shallow wetland habitat in this region. This part of the state was in the South Zone until 1986, when adjustments in zone boundaries separated these habitats from those associated with the Lower Mississippi and St. Francis rivers. Addition of the third zone in 1991 allowed season timing to include much of December as seasons progressively increased in length to 60 days by 1997. This region accounted for 3-5% of the statewide duck harvest through the 1980s (60-70% mallards); however, the proportion increased to 7-11% (35-45% mallards) during the 1990s corresponding to Otter Slough CA development. Although the proportion of harvest comprised of mallards declined, the magnitude increased dramatically as did total duck harvest.

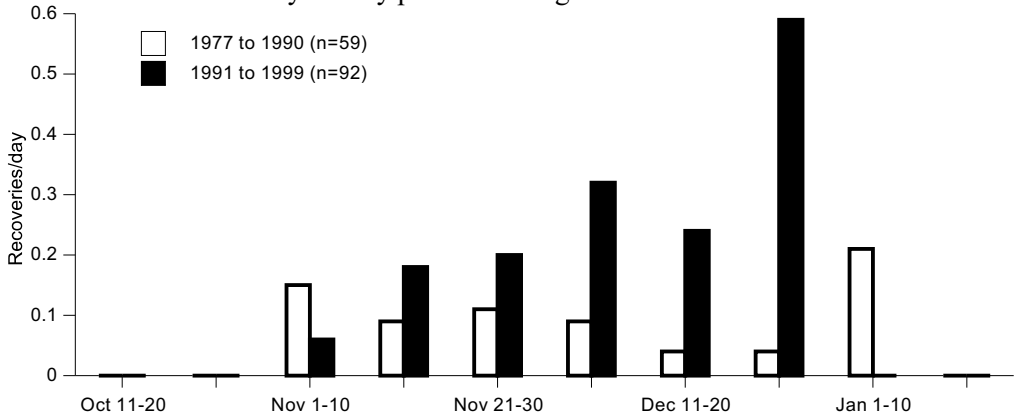
A broad range of hunting preferences includes weeks from early November through January. As in other portions of Missouri, later season preferences developed after recent mild winters. Early season harvest of early-migrant dabbling ducks (50% of the region's harvest) is complemented by late season increases in mallard harvest during recent years. The challenge in the Otter Slough region is to balance increasing and predictable opportunities for early-migrant dabblers with late season mallard hunting which occurs during periodic November / December flooding.



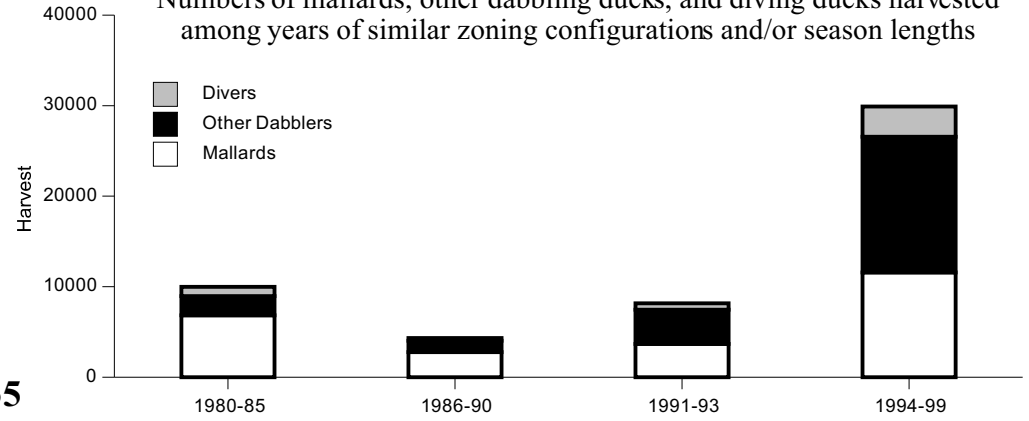
Week most preferred to hunt ducks for hunters who primarily hunted the Otter Slough region during 1996-99



Numbers of mallard band recoveries per day of open season by 10-day periods during 1977-90 and 1991-99

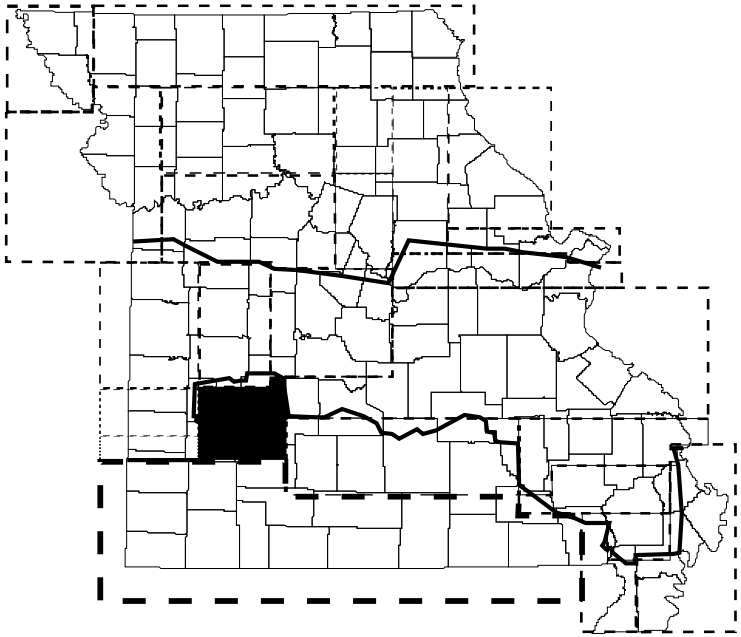


Numbers of mallards, other dabbling ducks, and diving ducks harvested among years of similar zoning configurations and/or season lengths

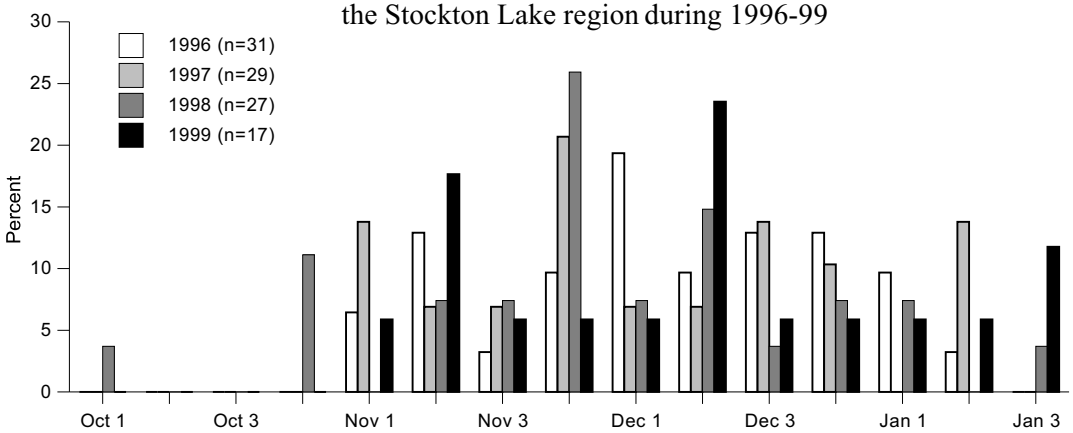


STOCKTON LAKE: As shallow wetlands freeze (e.g. Schell-Osage to the North), mallards shift habitat use to Southwest Missouri reservoirs, where they often remain well into the winter. When duck zones initially were established in 1977, Stockton Lake was in the North Zone. This was changed when zones were reconfigured in 1980; the original boundary in Southwest Missouri of HWY 160 was amended to HWY 54. Stockton remained in the South Zone when 3 zones were established in 1991 even though the area to the West was incorporated into the Middle Zone to accommodate earlier season preferences. The region has accounted for 0.5-3% of the statewide harvest since 1980 (30-55% mallards), and <1% of Missouri's hunters primarily hunt the Stockton Lake region.

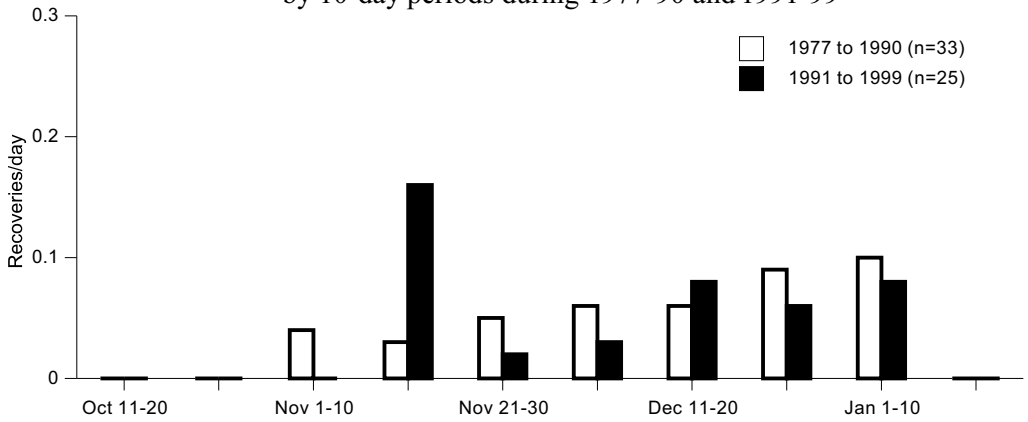
Opinions about the best week to hunt have been extremely variable with at least 10% of the hunters from this region favoring weeks from late October through January since 1996. Peak preference shifted from late November to mid-December during the mild winters of 1998 and 1999. In contrast to recent preferences for hunt season timing, most mallard band recoveries have been reported from mid-November (opening week) during the last decade.



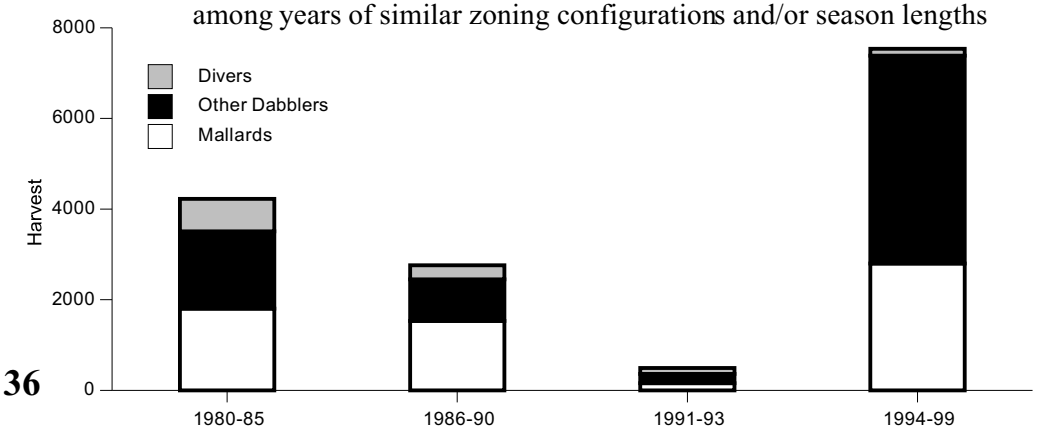
Week most preferred to hunt ducks for hunters who primarily hunted the Stockton Lake region during 1996-99



Numbers of mallard band recoveries per day of open season by 10-day periods during 1977-90 and 1991-99

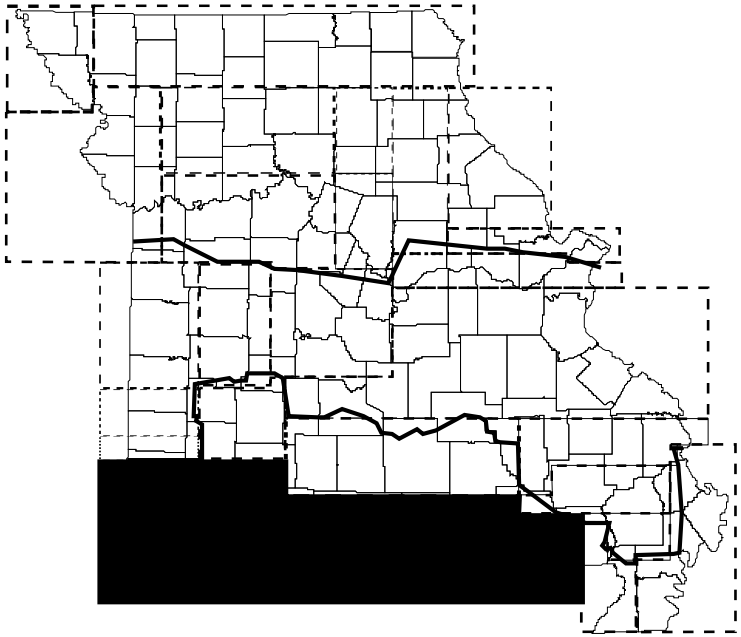


Numbers of mallards, other dabbling ducks, and diving ducks harvested among years of similar zoning configurations and/or season lengths

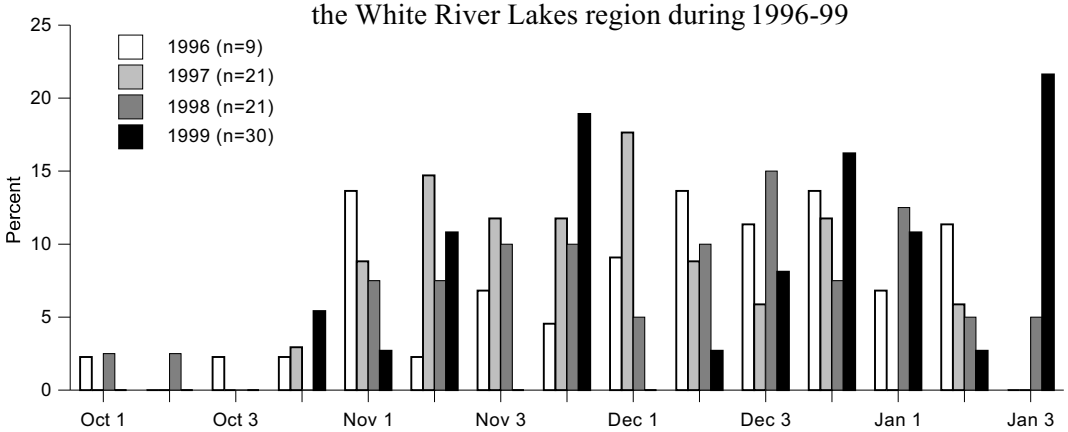


WHITE RIVER LAKES: Large reservoirs in South Missouri provide limited habitat diversity for migrant ducks; however, traditions both for early season diver hunting and late season mallards have developed. Lack of shallow wetland habitat in south Missouri limits the number of ducks supported throughout the fall and early winter. Regardless, the proportion of statewide harvest (1-3%), the magnitude of total harvest, and proportion of mallard harvest in the region (50-55%) have been quite consistent.

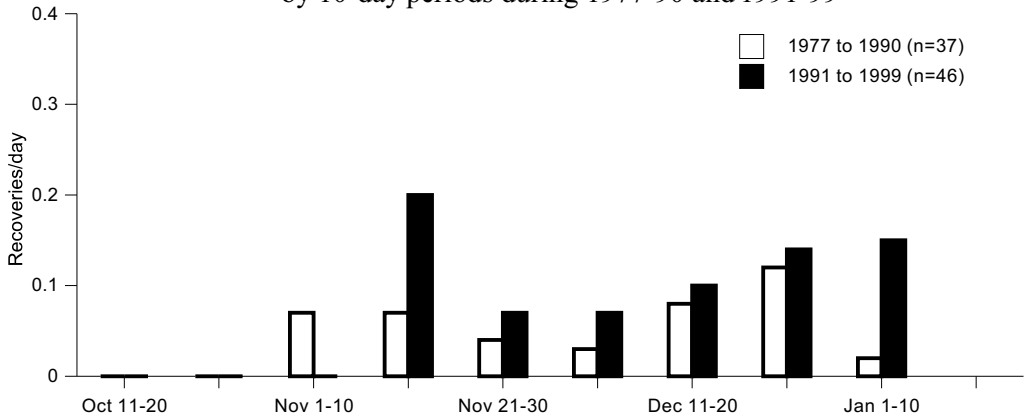
Because of the disparate preferences for species (early divers versus late mallards) the wide variation in hunters' views about the preferred week to hunt is no surprise. The range of hunting preference also is explained by the temporal differences in the rate of mallard band recovery. Relatively high harvest has been apparent in mid-November (opening day and migration events) and again in late December and early January (2 recoveries in 3 days of hunting after 11 January are not included due to small sample sizes).



Week most preferred to hunt ducks for hunters who primarily hunted the White River Lakes region during 1996-99



Numbers of mallard band recoveries per day of open season by 10-day periods during 1977-90 and 1991-99



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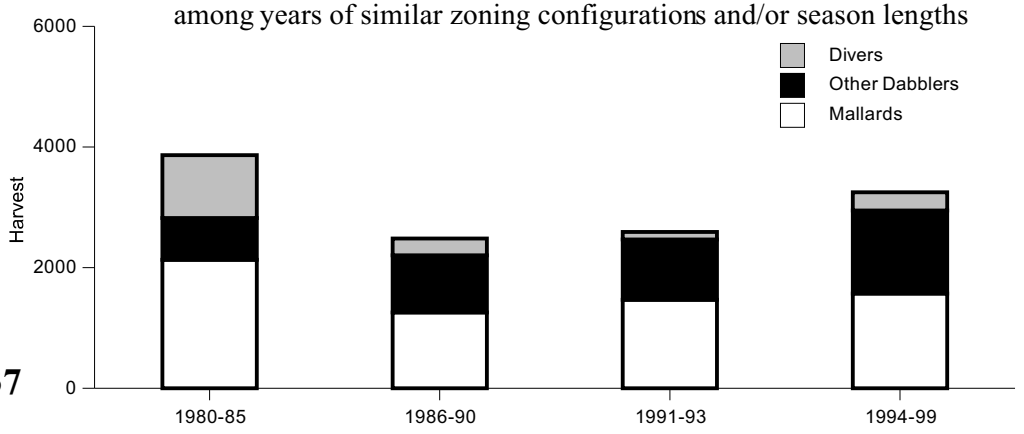
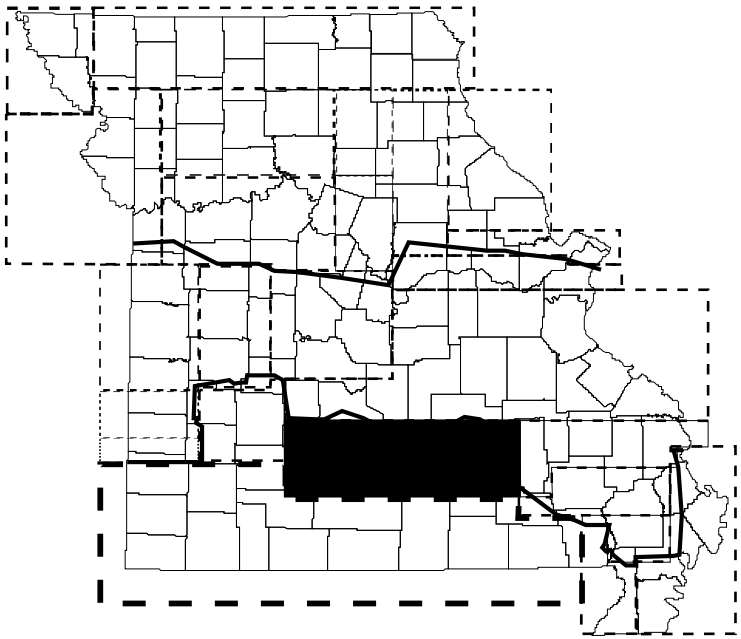
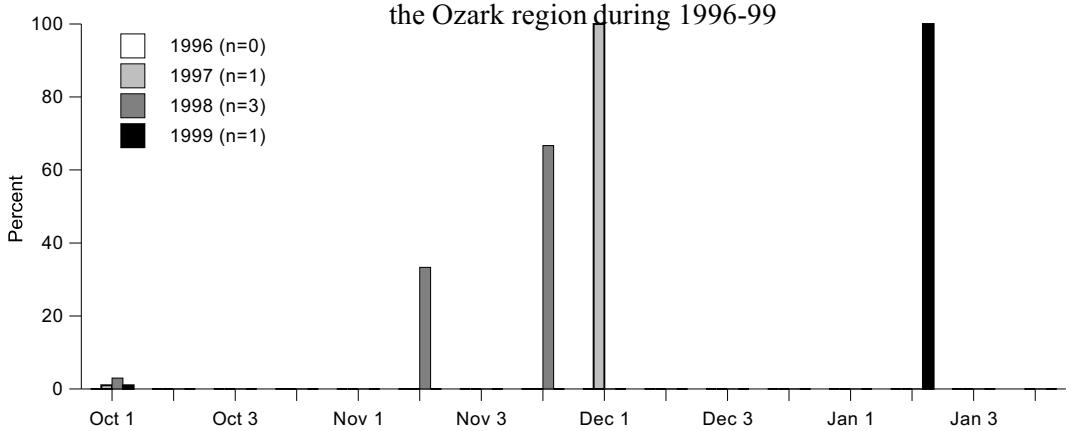


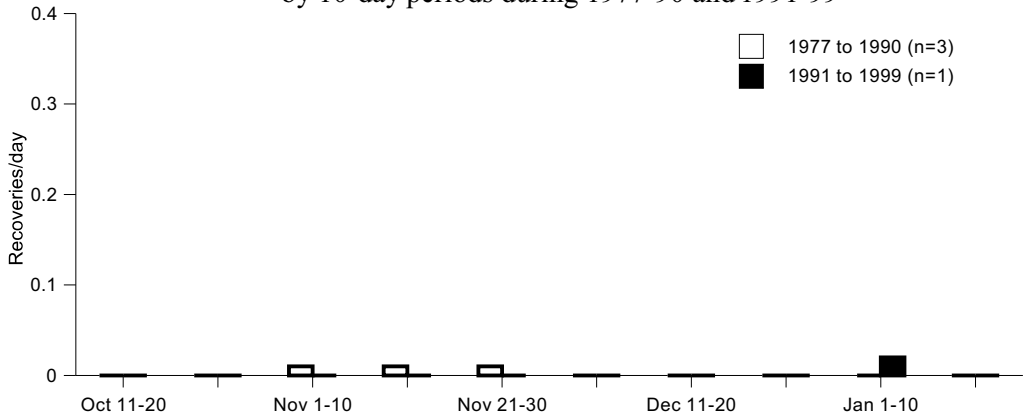
OZARKS: Very limited wetland habitat occurs in the Ozark region. Virtually no mallard harvest is apparent from the lack of band recoveries in the Missouri Ozarks. Few hunters reporting harvest and attitudes on post-season surveys and very limited numbers of mallard band recoveries confirm the lack of duck hunting opportunity. Wood ducks and early migrant dabblers are present on Ozark streams during migrations periods, and mallards are present during late season freeze-up. However, duck numbers are small compared to other regions of the state.



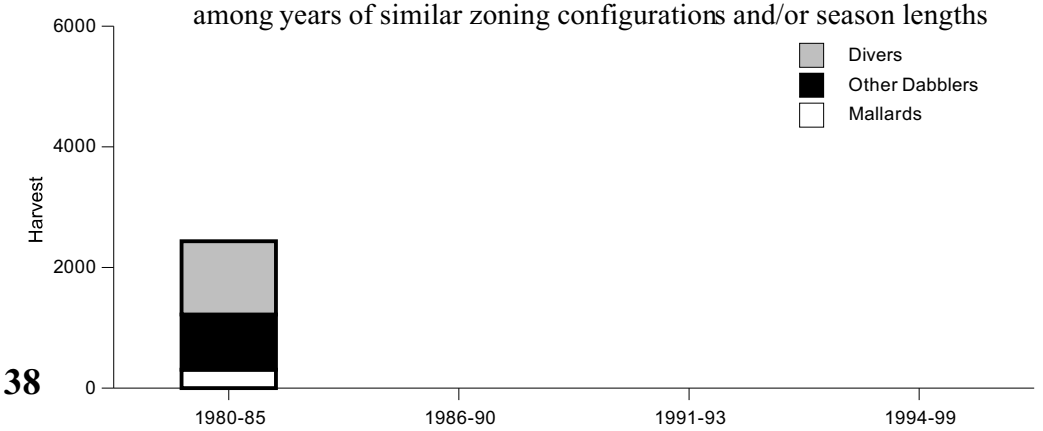
Week most preferred to hunt ducks for hunters who primarily hunted the Ozark region during 1996-99



Numbers of mallard band recoveries per day of open season by 10-day periods during 1977-90 and 1991-99

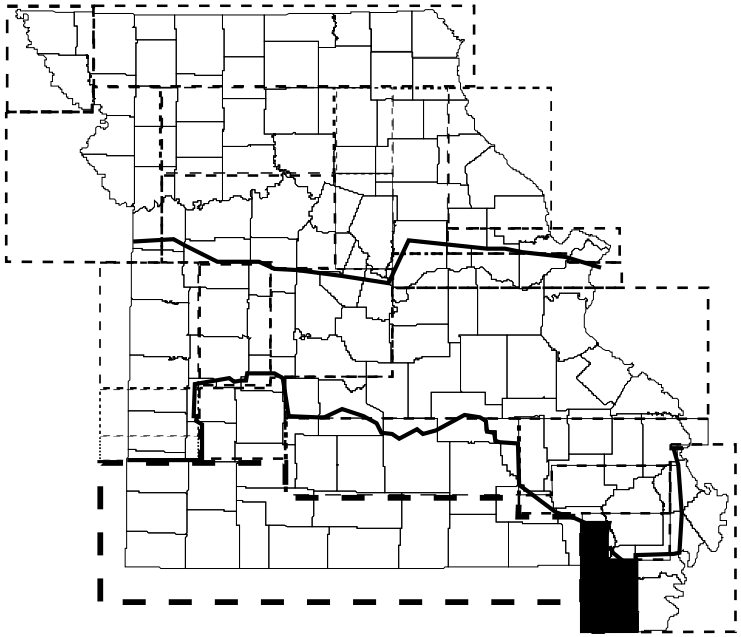


Numbers of mallards, other dabbling ducks, and diving ducks harvested among years of similar zoning configurations and/or season lengths

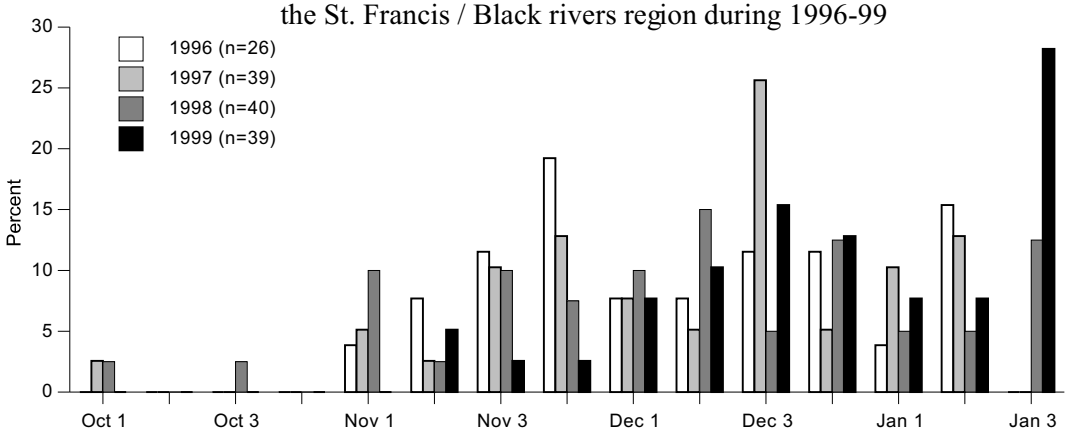


ST. FRANCIS / BLACK RIVERS: Similar to the Lower Mississippi River region, late season flooding or open water associated with rivers present habitat for ducks and duck hunters in this portion of the upper Mississippi Alluvial Valley. The only managed public wetland is Coon Island CA (restoration completed in 1996), which has hosted limited numbers of ducks during migration and wintering periods. Other public land, such as Hornersville Swamp and Ben Cash Memorial CAs, as well as private lands associated with the St. Francis and Black rivers provide the most predictable habitat with increased rainfall during November and December. This region has been included in the South Zone since 1977. Progressively later seasons were provided through split seasons early in the 1980s, through reconfiguration of zone boundaries in 1986, and establishment of three zones in 1991. The region accounts for 1-3% of the statewide harvest (50-75% mallards), and about 1% of the Missouri duck hunters hunt most in this part of the state.

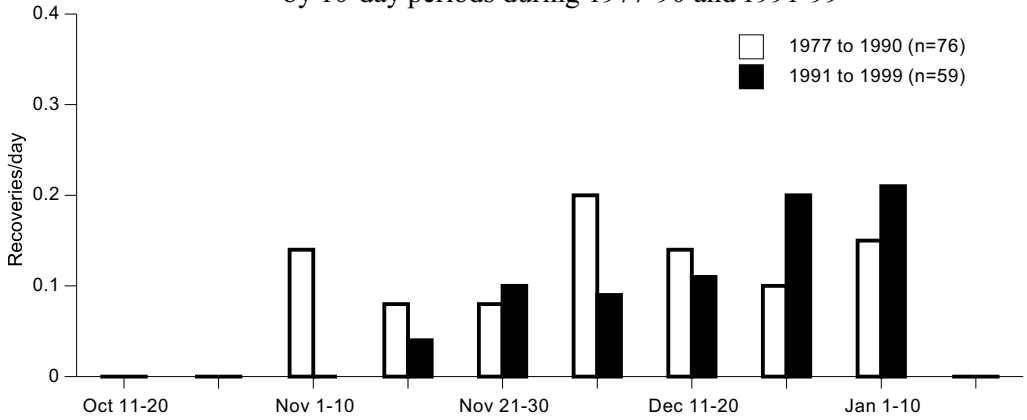
Hunting preferences consistently favored late season weeks; however, earlier preferences have been apparent as well. Similar to the Lower Mississippi River region, late season preferences prevailed following the extremely mild winters of 1998 and 1999. There has been a trend for greater band recovery rates in late season, although fairly substantial mallard harvest has occurred during November (8 band recoveries during 9 days of hunting during 11-20 January were not included due to small sample size).



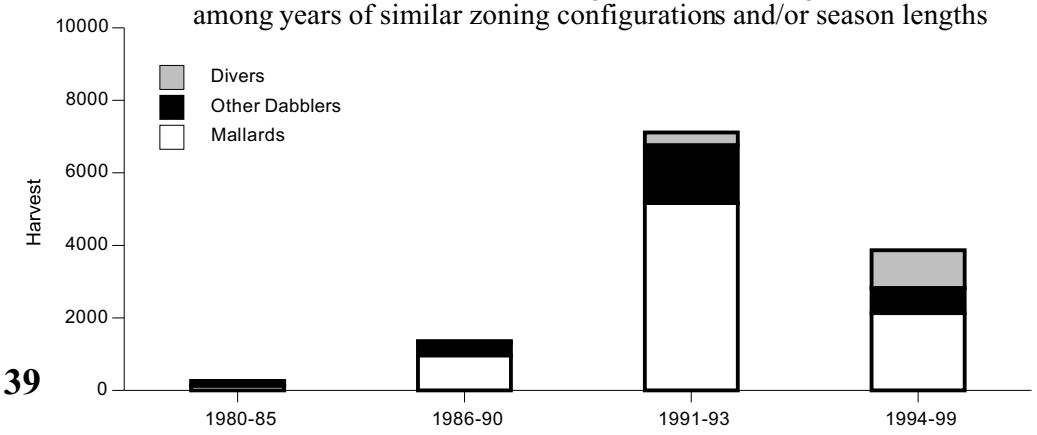
Week most preferred to hunt ducks for hunters who primarily hunted the St. Francis / Black rivers region during 1996-99



Numbers of mallard band recoveries per day of open season by 10-day periods during 1977-90 and 1991-99

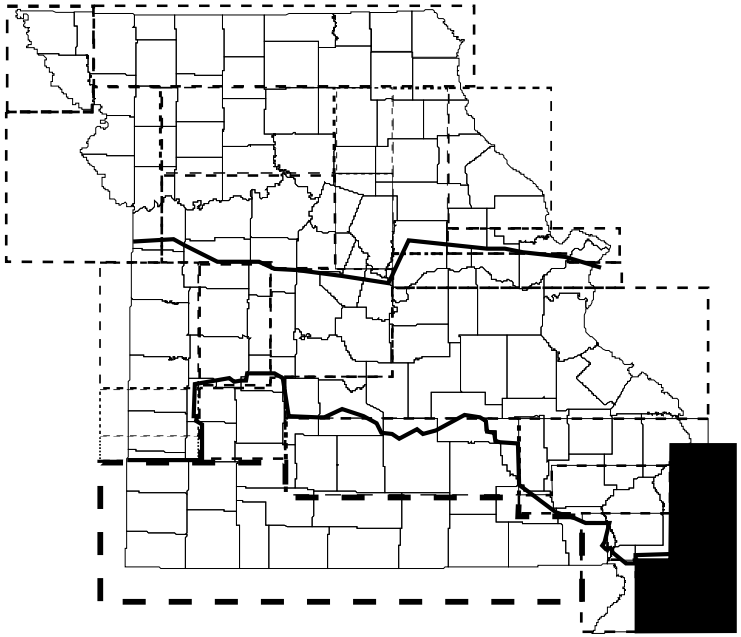


Numbers of mallards, other dabbling ducks, and diving ducks harvested among years of similar zoning configurations and/or season lengths

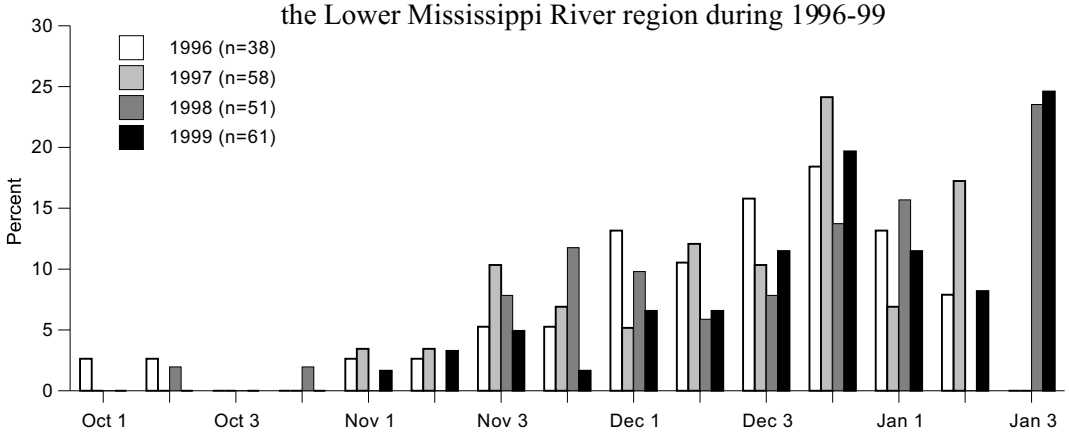


LOWER MISSISSIPPI RIVER: Late season flooding or open water associated with the Lower Mississippi River in December and January account for the late hunting season preferences in Southeast Missouri. This region has been included in the South Zone since 1977 and accounted for 1-5% of the statewide duck harvest (60-80% mallards). Progressively later seasons were provided through split seasons early in the 1980s, through reconfiguration of zone boundaries in 1986, and establishment of three zones in 1991. Ten Mile Pond CA, following development in 1992 (phase 1) and 1993 (phase 2), provided wetland habitat and hunting opportunity for November migrants, and harvests appeared to follow the trend of earlier habitat availability. Late season mallard harvest still predominates, however.

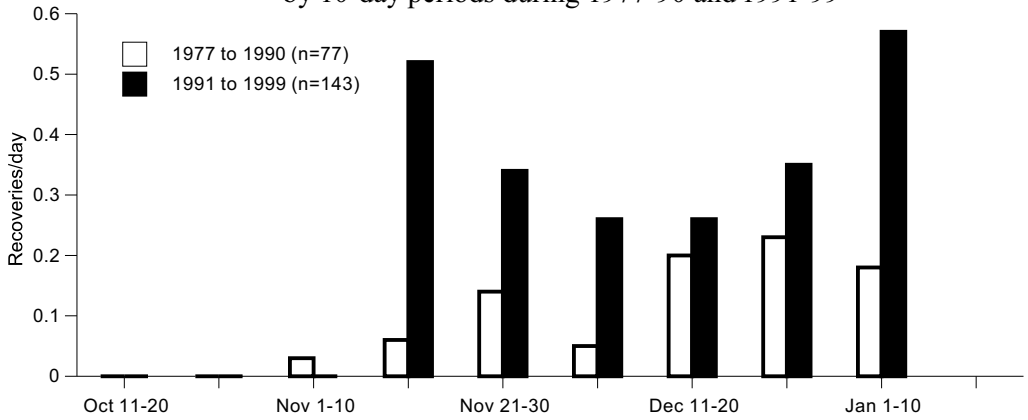
Mallard band recoveries have been highest in recent years during the opening week (corresponding to primary migration periods) and as late season mallards concentrate in remaining open water (3 band recoveries during 8 days of hunting during 11-20 January were not included due to small sample size). Hunting preferences consistently favored the last week of December (Christmas and New Year's holidays). Following the extremely mild winters of 1998 and 1999, late season preferences prevailed.



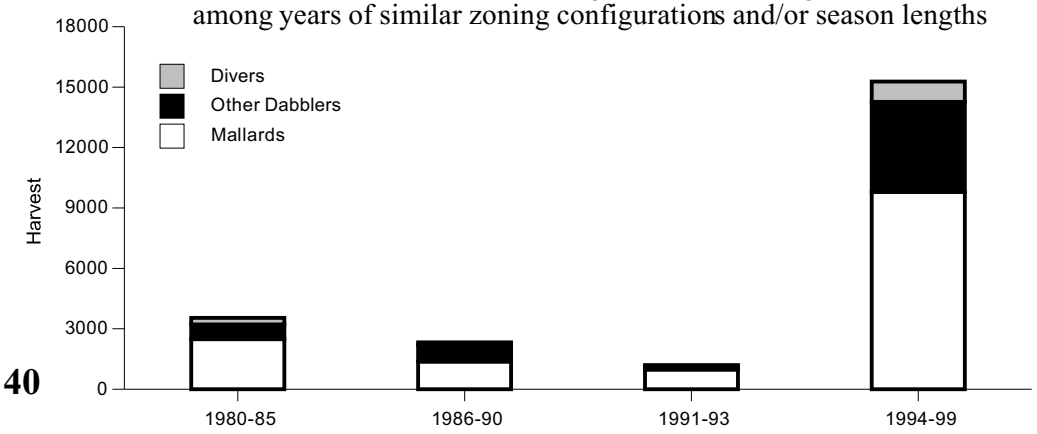
Week most preferred to hunt ducks for hunters who primarily hunted the Lower Mississippi River region during 1996-99



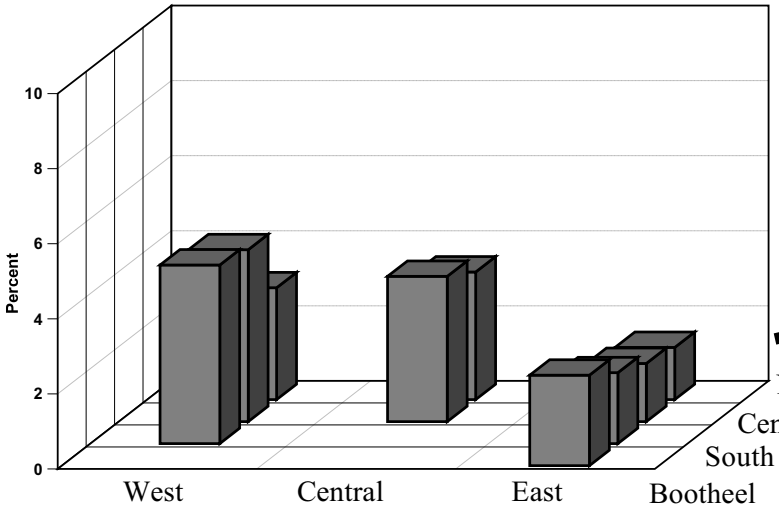
Numbers of mallard band recoveries per day of open season by 10-day periods during 1977-90 and 1991-99

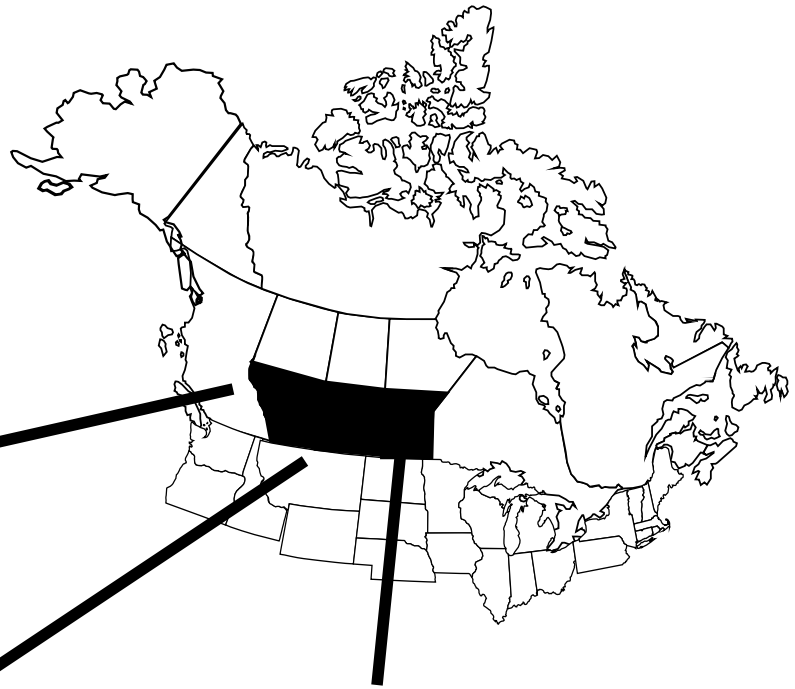


Numbers of mallards, other dabbling ducks, and diving ducks harvested among years of similar zoning configurations and/or season lengths

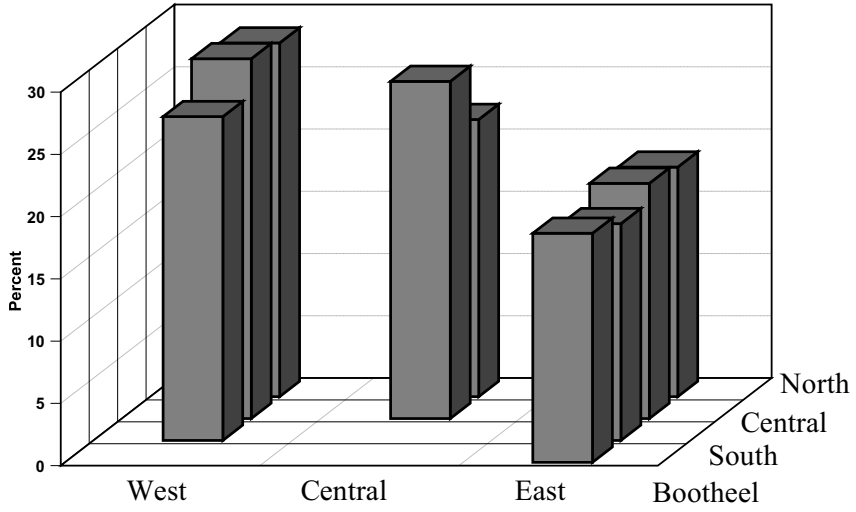


Percent of mallard band recoveries by geographic areas of Missouri for birds banded in Prairie Alberta (n=198)

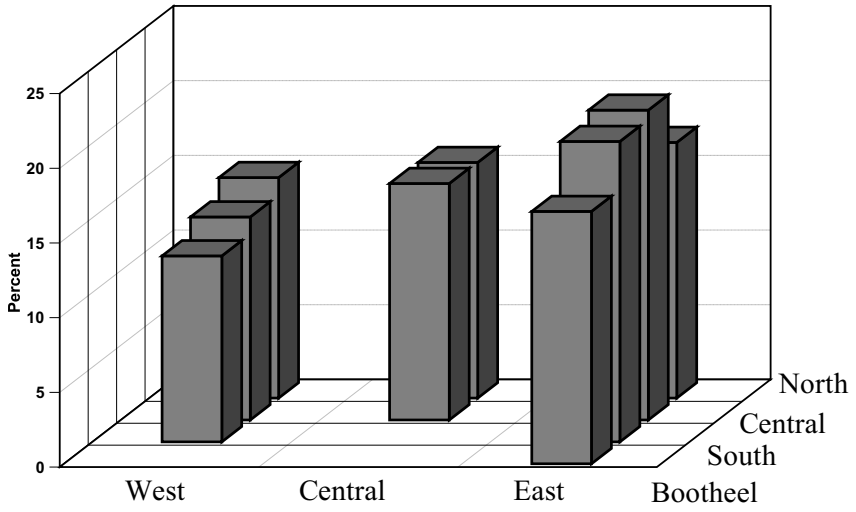


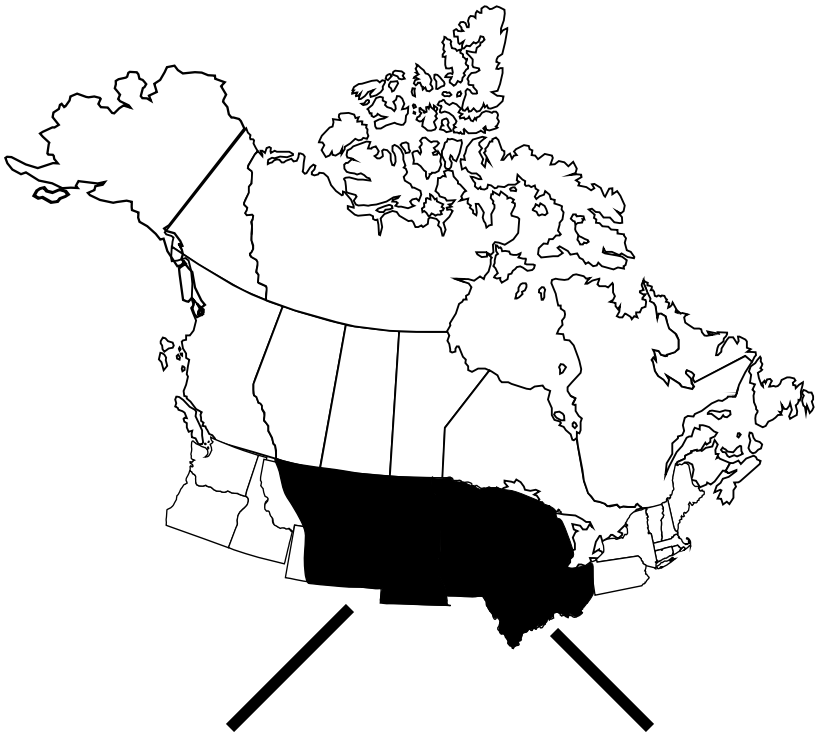


Percent of mallard band recoveries by geographic areas of Missouri for birds banded in Prairie Saskatchewan (n=1576)

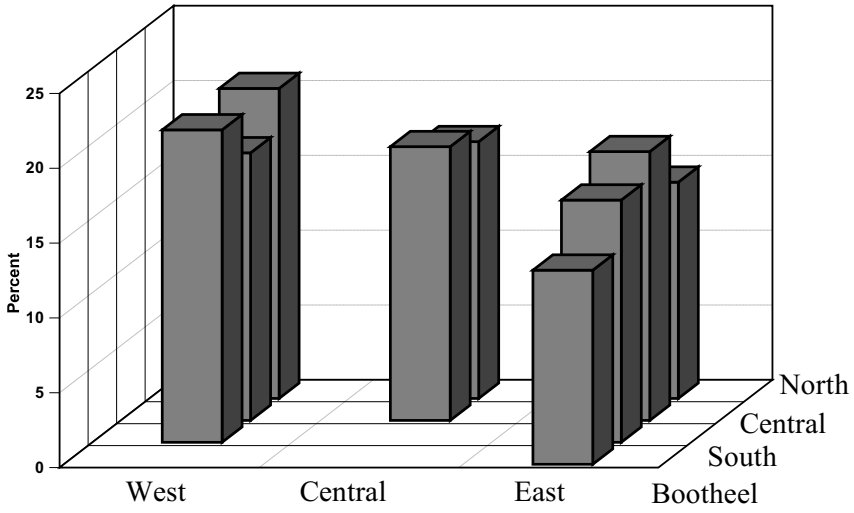


Percent of mallard band recoveries by geographic areas of Missouri for birds banded in Prairie Manitoba (n=1160)

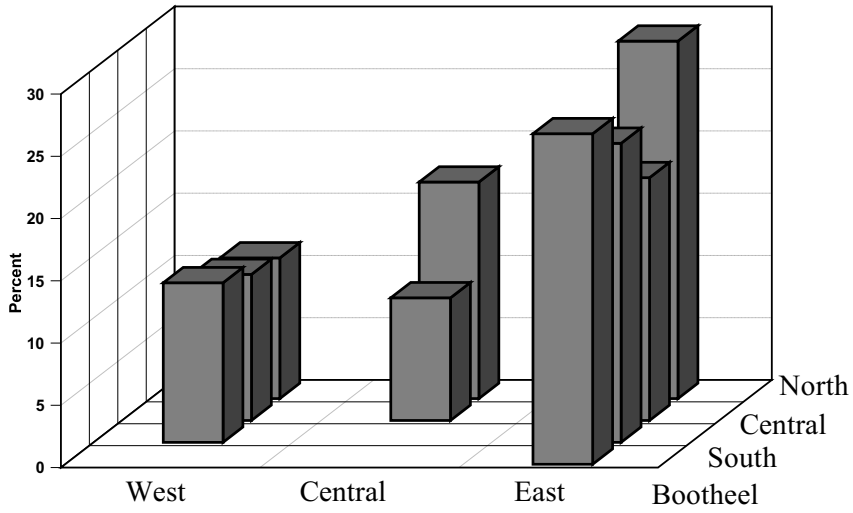




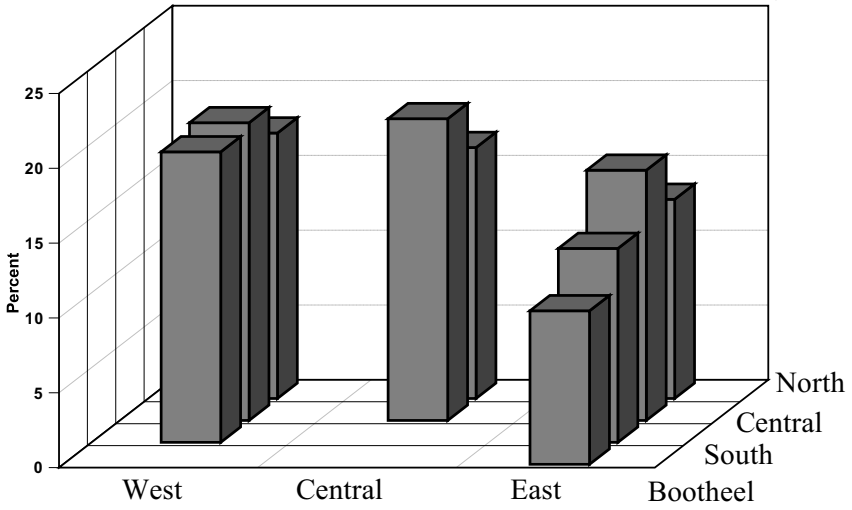
Percent of mallard band recoveries by geographic areas of Missouri for birds banded in the northern Central Flyway (n=1184)



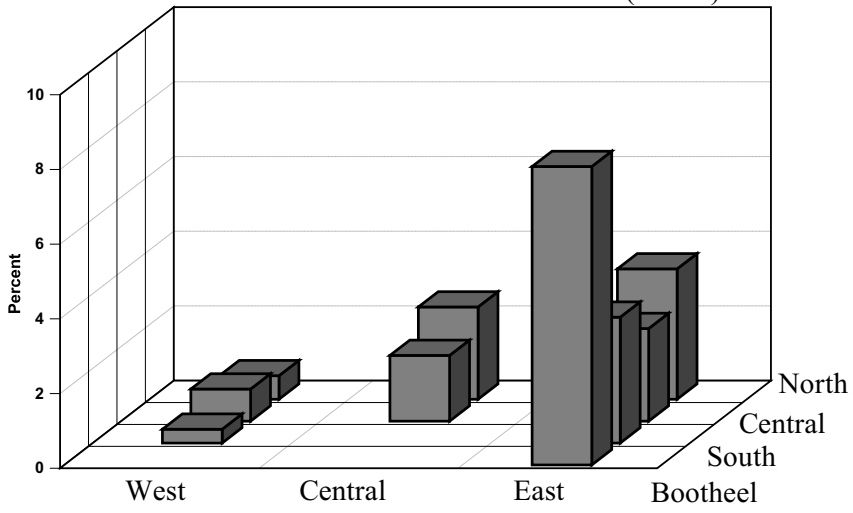
Percent of mallard band recoveries by geographic areas of Missouri for birds banded in northern Mississippi Flyway (n=1368)

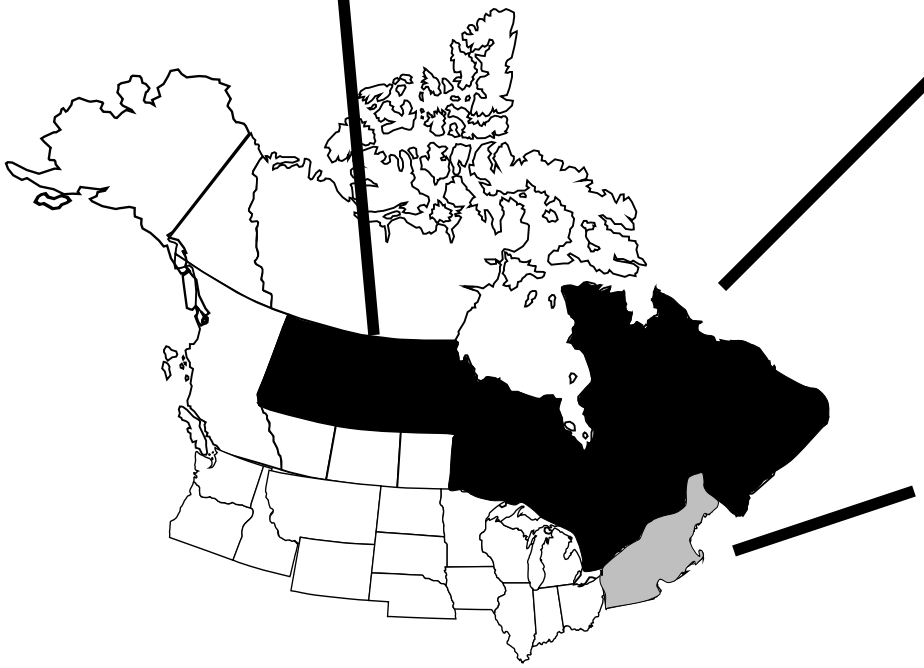


Percent of mallard band recoveries by geographic areas of Missouri for birds banded in northern Manitoba, Saskatchewan, and Alberta (n=1122)

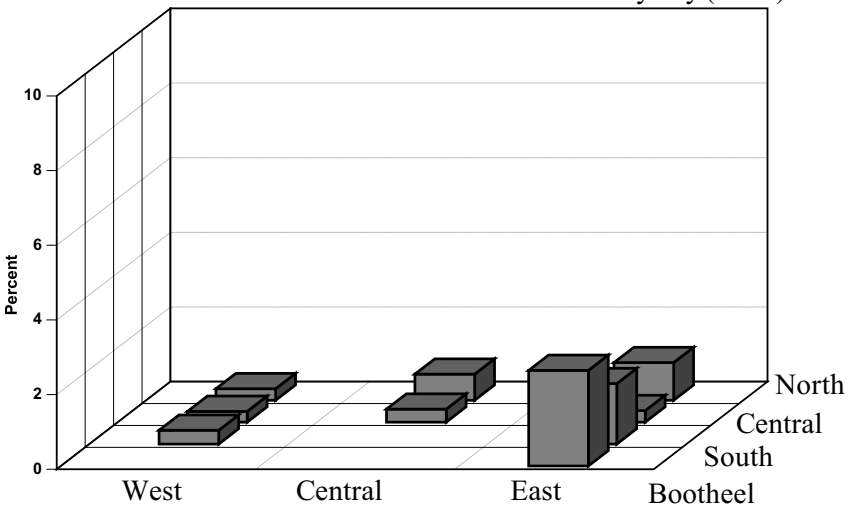


Percent of mallard band recoveries by geographic areas of Missouri for birds banded in Eastern Canada (n=199)

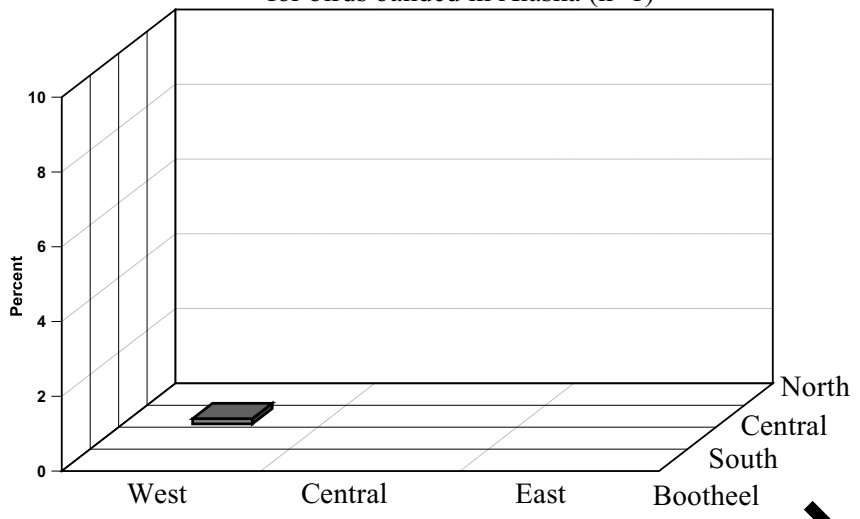




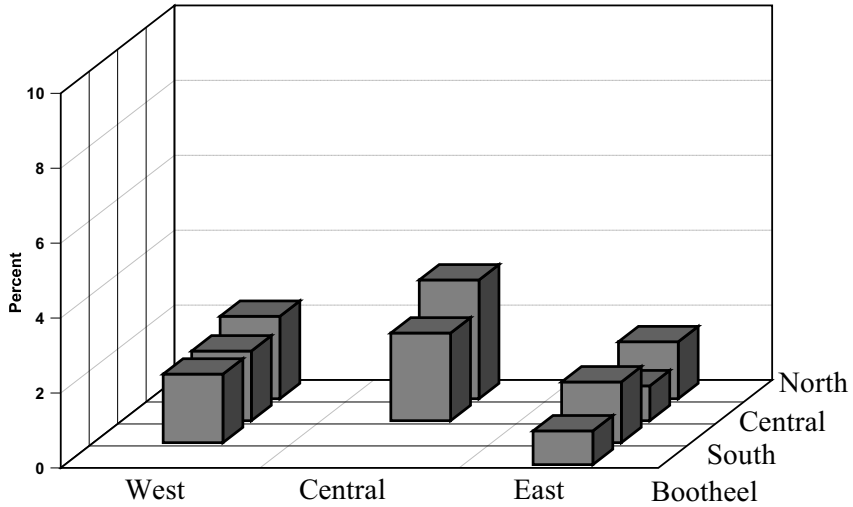
Percent of mallard band recoveries by geographic areas of Missouri for birds banded in the northern Atlantic Flyway (n=63)



Percent of mallard band recoveries by geographic areas of Missouri for birds banded in Alaska (n=1)



Percent of mallard band recoveries by geographic areas of Missouri for birds banded in Northwest Territories (n=138)



Percent of mallard band recoveries by geographic areas of Missouri for birds banded in Pacific Flyway and British Columbia (n=9)